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Making mistakes, no big deal! – How Finnish primary school teachers understand coping with ambiguity, uncertainty and risk

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This study focuses on how Finnish primary school teachers understand coping with ambiguity, uncertainty and risk, and how they react to students' mistakes and their own mistakes. In the last few decades, Entrepreneurship education has become a bigger trend in Finland and other European Union member countries. I believe this can also have promises for other contexts like Japan, where I am from. Therefore, this research tries to examine from Entrepreneurship education context. There is a lack of primary school level research about Entrepreneurship education in Finland, also less about Finnish primary school teachers' perspective about Entrepreneurship education and entrepreneurship competence. This research tries to fill the gap. In the theoretical framework, Finnish education system, teacher education, Entrepreneurship education and Entrepreneurship Competence Framework and making mistakes are introduced. I applied the well-known Entrepreneurship Competence Framework for the common concept of entrepreneurship in European Union countries, to examine the specific competence which is related to making mistakes.

Qualitative research approach is adopted, where I used thematic analysis as a method to interpret the data represented by interview transcripts. I conducted 15 interviews with Finnish primary school teachers. The data is collected through semi-structured interviews in English. It is mainly to ask how they react to coping with ambiguity, uncertainty and risks and general mistake making. The interviewees are found by snowball sampling, they live in the north part of Finland, they are coming from several different schools.

As findings, through the process of thematic analysis, three interconnected subthemes are formed which are Role, Behavior and Attitude. Then, the main theme, Teachers' mindset consists of those subthemes. Through discussion of teachers' own Role, Behavior and Attitude, teachers embrace and act to ambiguity, uncertainty and risk and they are trying to be open to them. Through discussion of teachers' Behavior, it is easy to conclude that teachers' overall reaction to making mistakes is accepting. They think mistakes are a part of life, learning from failure. Finally, this thesis contributes to the understanding of Finnish primary school teachers' mindset in the context of Entrepreneurship education and entrepreneurship competences. It can be a steppingstone for further research in teachers' perspective to these specific areas.

Keywords: coping with ambiguity, uncertainty and risk, entrepreneurship education, entrepreneurship competence, Finnish teacher, making mistakes, primary school

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Lastly, I must thank 15 research participants and friends who introduced them to me. The teachers' thoughts and reactions have made this thesis and have brought me to complete it.

CONTENTS

1 INTRODUCTION

1.1 My interests to this research

I came from Japan to Finland in the summer of 2019. My main motivation for studying here was learning about Finnish education to improve Japanese education. In fact, already in my application, I wrote about the issue of students' low self-esteem in Japan as a research topic. In Japan, a number of social and educational issues have emerged and become hot topics, besides children's low self-esteem, like 'Futoko' which refers to students no longer attending schools due to emotional/mental distress. According to the Ministry of Education, Culture, Sports, Science and Technology (MEXT) Japan, 0.8% of primary school students, 3.8% of middle school students are Futoko students (MEXT, 2020). The number has been growing for 7 years in a row (MEXT, 2020). Many of those students cannot get formal education because the home schooling system is uncommon and not organized. There are many out-of-school education places, which are organized by Non-profit organizations, to study or to spend time during the daytime for the students, called Free school, but they have to pay some tuition fees there. Also, there are other issues preocupying Japanese people, like "the highest suicide rate among young people in G7" and "lack of hope to the future by youth" comparing with other countries (Ministry of Health, Labour and Welfare, 2020; The Nippon Foundation, 2019). Therefore, nowadays there is a growing trend among educators in Japan to change the educational system and culture as the concern for children and youth is growing. I know that those issues are quite complicated and it is hard to solve only by education, but I would like to bring some ideas to Japan through my study. My previous career was an after school teacher for primary school kids. I met many students feeling uncertain, who were constantly afraid of 'making mistakes'.They were consistently seeking validation in a perpetual flow of questions such as 'is this okay to do this?' 'Is this right?' Then one question came to mind, "Are Finnish students feeling uncertain in the same way? How are Finnish schools dealing with students making mistakes?"

I did my internship at a comprehensive school in the north part of Finland. I worked as a teaching assistant in the first graders' classes. Then I found that the Finnish teachers are generally more relaxed and flexible than Japanese teachers, while it can depend on the teacher. There is lots of freedom to use students' creativity, letting students perform as much as they want, and trusting students' own ideas. Teachers in general appear to appreciate and respect students' opinions and feelings. I even heard some of the teachers say that school is the place for practicing. This teachers' stance informed the title of this work. When I had interviews with Finnish

primary school teachers to know the reaction to mistake making, almost all were saying that “it is not such a big deal”, “it doesn’t matter” and “it is not the end of the world”.

While I could understand and appreciate the sentiment, it is certainly not a common reaction to mistakes that I could observe back in Japan. That is why I felt the teacher’s comment was striking and inspiring to use in the title. It is different from ideas in Japan. It is sure that Finland and Japan have many differences in culture and history, so I could not compare it here and it is not my aim, but the Finnish experience is impressive and vivid to me. If I could study Finnish primary school teachers in regards to attitudes that are open, positive and have flexibility towards making mistakes, it would perhaps influence their students. This reflection led me to think more about Finnish teachers’ reaction. In line with this concern and facing the differences between education in Japan and Finland generally, I decided to focus on how Finnish primary school teachers react towards making mistakes. Then, in a happy coincidence, I was acquainted with Entrepreneurship education.

I discovered Entrepreneurship education because I was looking for an idea and concept to improve and promote students’ agency, initiative and action by themselves. In the literature, the Entrepreneurship Competence Framework (Bacigalupo, Kampylis, Punie &Van den Brande, 2016) was cited by several authors which led me to learn more about it. Although I will explain this model in the theoretical framework, one of the competences of this model deals with ‘coping with ambiguity, uncertainty and risk.’ It therefore became clear that Entrepreneurship education could be the conceptual context to ground my research interest about ‘making mistakes’.Entrepreneurship education was defined by The European Commission in 2017, in saying that “Entrepreneurship education prepares people to be responsible and enterprising individuals. It helps people develop the skills, knowledge, and attitudes necessary to achieve the goals they set out for themselves.” The goal is to develop an individual’s entrepreneurial mindset, entrepreneurial way of thinking and working. There are many articles which are looking at entrepreneurial mindset in general and Entrepreneurship education in Finland (Pihie & Sani, 2009; Seikkula-Leino, 2010; Zupan, F.Cankar & S.Cankar, 2018). Kyrö (2006) and also Komulainen, Korhonen and Räty (2009) talked about Risk-taking and failure to some extent, but it is not specifically about primary schools. But there is no specific research to be found about Finnish primary school teachers’ concrete understanding about ‘coping with ambiguity, uncertainty and risk’ and/or ‘making mistakes’ from the perspective of Entrepreneurship education. Also,

Entrepreneurship education is still widely understood and applied for university level and adult education level (Gorman et al. 1997; Dickson et al., 2008; Jones et al., 2012). Most of the Entrepreneurship education courses (Fayolle, 2013; Maritz & Brown, 2013), and studies handle with university level (see, for example, Gorman et al. 1997; 26 Dickson et al., 2008; Fuchs et al., 2008; Jones et al., 2012; Mwasalwiba, 2010; Maritz & Brown, 2013). Some research about Entrepreneurship education was conducted with Finnish teachers, but many of those focus on upper secondary schools or middle schools, some were in all school levels of K-12, although they do not look at primary level deeply (Ruskovaara, 2014). Especially, lower educational levels are quite difficult to examine, and researchs are limited because of lots of variables to compare findings (Ruskovaara, 2014). Even in Entrepreneurship education researches at primary, middle school and upper secondary schools, they examined how to do and what to do (Ruskovaara & Pihkala, 2013). Therefore, this research could contribute to Entrepreneurship education in primary school teaching in Finland by focusing on primary 1-6th graders and teachers' understanding of the competence. The research will focus on teachers who do not use/teach Entrepreneurship education and teachers who do use/ teach Entrepreneurship education in the classroom. Since I would like to find out how Finnish teachers react to making mistakes, and coping with ambiguity, uncertainty and risk generally, I did not focus on some Entrepreneurship education knowledgeable group of teachers.

My motivation for this research is also accelerated by Sustainable Development Goals (SDG) 2030 (United Nations, 2015). In my previous job, an after school teacher in Japan and master study in Finland, I am caring about education as an educator myself, I realize the importance of contributing to SDG4, Quality Education. I think that my research could be devoted to 4.4 Increase the number of people with relevant skills for financial success and 4.7 Education for sustainable development and global citizenship in SDG4, but I believe that Entrepreneurship education works for all the goals as a basis. Therefore, hopefully my research devotes a bit there. 4.4 is Increase the number of people with relevant skills for financial success, and 4.7 is Education for sustainable development and global citizenship. Further, as I mentioned, this research is coming from the serious issues in Japan, so I hope it will bring some elements for the solution of the issues. Then I also bring SDG3 which is Good health and well-being and my research is close to mental health, consequently relates with 3.4 Reduce mortality from non-communicable diseases and promote mental health.

1.2 Research Question

Following my first ideas, the research question that guided my research process was: How do Finnish teachers develop students to accept making mistakes? After discovering the Entrepreneurship Competence Framework, I added 'coping with ambiguity, uncertainty and risk' as an umbrella concept to 'making mistakes'. Therefore, the current main research question of this research is: **What does coping with ambiguity, uncertainty and risk mean to Finnish primary school teachers?** Then I specify my interest with a sub question: **How do Finnish teachers react to general mistake making?** General mistake making includes both students' and teachers' mistakes.

As those questions are grounding my work, it is fundamental that the key concepts that compose my questions are clarified. One of those concepts is *coping*, which means 'realistic and flexible thoughts and acts that solve problems and thereby reduce stress.' It focuses on cognition or individuals' perceptions and thoughts about their relationships with the environment (Singh, Corner & Pavlovich, 2007). For example, if bullying occurs in a class, a coping student could try to understand the motives of bullying and seek different allies to help in alleviating or solving the situation. Then another key concept is *ambiguity*, which means 'the existence of multiple and conflicting interpretations' (Walker, Davis & Stevenson, 2017). This can be seen in a student situation if, for instance, they decide to not go to school. If the students do not mention why, parents can wonder - is it because of bullying, depression by friends or teachers' relationship, school events or exams' pressure and so on. The reasons for not attending here are ambiguous. *Uncertainty* means that "situation which involves imperfect and/or incomplete information, and which affects the predictability of outcomes. Uncertainty entails a risk of undesired effect or loss, whose probability and magnitude cannot be calculated" (Bacigalupo, Kampylis, Punie & Van den Brande, 2016). It happens now under the pandemic. For example, many teachers in Japan are preparing school trips, cultural festivals, and sports festivals for this autumn. They use lots of time for it, but no one knows whether it could happen later or not. Those unpredictable circumstances bring uncertainty. *Risk* means 'from being acceptable to be unacceptable' (Walker, Davis & Stevenson, 2017). For example, Japanese Ministry supports distributing tablets to all primary and middle schoolers. But some of the Education Board of municipalities are afraid that students have access to unpreferable websites. This would then be seen as a risk - from using the tablet in an acceptable way to an unacceptable way.

Ambiguity is the existence of multiple and conflicting interpretations and *Uncertainty* is incomplete information, and which affects the predictability. Comparing the two, I could say that *Uncertainty* deals with the lack of knowledge and information, where ambiguity holds knowledge but it can be interpreted differently. Risk shows up with something uncertain. There are several persisting elements between the different understandings of *Risk,* most frequently consequence, probability and *Uncertainty* (Schenk, Hamza and Enghag et al, 2019). Also, Park and Shapira (2017) said that Risk refers to situations under which all potential outcomes and likelihood of occurrences are known, but Uncertainty refers to situations under which either the outcomes and/or their possibilities of occurrences are unknown. Hence, the two are also similar but with exactly different meanings.

My hope for this research is that it would be accessible outside of academia. In particular, I aim to make the findings of this project useful for teachers, education administrators, other educators, and even parents. I hope my work will provide a glimpse into the Finnish primary school teachers' understanding and reaction. Then for readers, my aim is to share those perspectives and inspire the readers to evaluate the applicability and application of the findings in their own context. Guided by pragmatism allowing me flexibility in the means chosen to achieve my research goals, I interviewed 15 primary school teachers.

Expanding on the upcoming chapters, in the second chapter, I will elaborate further on the theoretical framework of this research. I will therefore elaborate on the meaning and interconnections of the key concepts present in my research, such as Education in Finland, Entrepreneurship education (EE), Entrepreneurship Competence Framework and Making mistakes. In the third chapter, I will explain methodology, thematic analysis in detail. I will also describe the data collection, interviews and specific process of data analysis. I conducted semi-structured interviews with 15 primary school teachers in the north part of Finland, then I investigated the transcriptions and made codes and found out the themes, analysed through thematic analysis. Next, in the fourth chapter there will be findings, which I found in the analysis in detail. There are main theme and 3 subthemes. I will describe what I can say from the themes, categories and codes under the themes. The fifth chapter presents discussion, and limitation and ethical consideration.This chapter will be a discussion of the results, what I can expand to think from it and further research and examine the quality of my research. Then, I will conclude about my research in the sixth chapter.

2 THEORETICAL FRAMEWORK

This chapter aims to identify the current state of research in Entrepreneurship education and share the settings and backgrounds of my research. I will give an overview of the education system in Finland (2.1), with teacher training and the social status and understanding of teachers in Finland. Then I will elaborate on the concept of Entrepreneurship education in general and in Finland (2.2), and then on the Entrepreneurship Competence Framework (2.3) which made for European Commission members' countries' understanding. In the end (2.4), I will expand on the meanings and implications of mistake making.

2.1 Education in Finland

Education allows knowledge, attitudes, and habits to be passed down across generations. Its primary purpose is to enable everyone to build personalities while also developing various competences. Finland is quite famous for education globally from 2001, because of its remarkable successes in the Organisation for Economic Co-operation and Development (OECD)'s Program for International Student Assessment (PISA) results in 2000, 2003, 2006 and 2009 (e.g., OECD, 2010). Finnish students achieved the highest level of international standard at the knowledge and skills in problem-solving, scientific, mathematical and reading literacy (Niemi & Nevgi, 2014). In discussing education in Finland, I will give more detail about how the Finnish education system and teacher education are organized, to then address the Finnish teachers' work (conditions and environment).

2.1.1 Finnish education system

A bit of history of education in Finland helps to contextualise its success. Looking back at the history of comprehensive school reform in Finnish education, it started in 1970 extensively and accelerated in 1990 (Antikainen and Pitkänen, 2014). Education has been one of the pillars of the Finnish welfare system since the 1970s. Finnish people in general are proud of their educational system, which provides equal educational possibilities to all, free of charge from pre-primary through higher education. Teachers in Finland all hold a master's degree and are dedicated to their profession (Uematsu-Ervasti, 2019). As illustrated in Figure 1 below (inspired by Finnish education in a nutshell, Ministry of Education and Culture & Finnish National Agency for Education, 2018) the Finnish education system consists of early childhood education and care which is provided for children (from 0 to 6 years old) before the

compulsory education begins, compulsory pre-primary education (from 6 to 7 years old) which is provided for children in the year preceding the beginning of compulsory education. Then nine-year basic education (comprehensive school for students from 7 to 16 years old), including 7-9th grades, middle school. Then, upper secondary education, which is either general upper secondary education (leading to university with students from 17 to 19 years old) or vocational education and training. The upper secondary education levels are also becoming compulsory from autumn 2021(Ministry of Education and Culture, 2021). Students proceed to general upper secondary and vocational education and training half and half ratio. Higher education is then provided by universities and universities of applied sciences, which is also mainly free of charge for Finnish residents. Also, there is adult education at all levels (Ministry of Education and Culture & Finnish National Agency for Education, 2018).

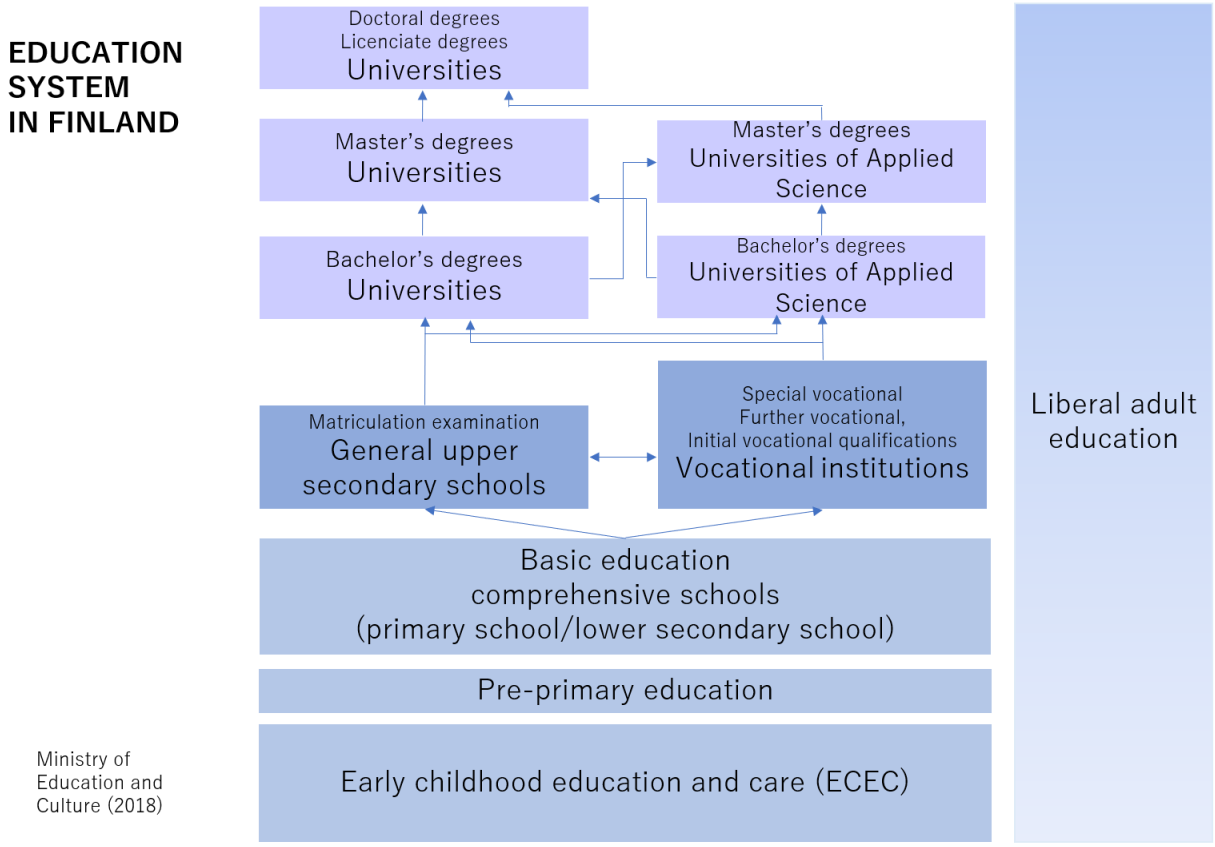

Figure1. Education system organisation in Finland

The Finnish national administration of education is encompassed by two institutions: the Ministry of Education and Culture, which is responsible for education policy, the other one is the Finnish National Agency for Education (until 2016 it was called the Finnish National Board of Education), it is subject to meeting the educational vision and fulfilling the implementation

of the policy. The two work for the national core curriculum (Vitikka, Krokfors & Hurmerinta, 2012). Municipality and schools are also responsible for the practical arrangement of the curriculum, so in Finland there are three levels of curriculums: national, municipality and school level, to implement effectively and appropriately in reality (Kupiainen, Hautamäki, & Karjalainen, 2009). The national core curriculum has to be determined every decade by the Finnish National Agency for Education. The recent reformed one for basic education was published in 2014, it was enforced in 2016. Needless to say, the contents got influenced by European Union, because Finland is a part of the EU (Paradis, 2019).

Additionally, Finnish educational system is majoritarily of public nature; over 90% of comprehensive, upper secondary and vocational schools are public (OECD, 2020, p21). There is a less competitive culture at schools than in countries like the United States or the United Kingdom because of less standardized testing and entrance examinations. The common exam for all over Finland is the matriculation examination for the graduation of general upper secondary schools, the results influence the enrollment selection to universities (Paradis, 2019).

2.1.2 Teacher education and work in Finland

To be trained as teachers in Finland, they undergo high competition to be selected to enroll teacher education or training at specific Universities, with acceptance percentage of the candidates of 15% (Moon, Vlăsceanu, & Barrows, 2003). Student teacher candidates should show that they have enough competences to be accepted and they are selected in two stages. The first stage is the candidates' matriculation exam scores and their collective school's evaluation average. Additionally, if they own an experience dealing with youth and children, it becomes an advantage. In the second stage, academic and nonacademic skills are in focus, where the candidate should pass a university exam, and express adequate communication efficiency. Then the candidate explains reasons why they would like to be teachers in the individual interview (Moon, Vlăsceanu, & Barrows, 2003). They are diligent and highly motivated. In Finland, teaching is regarded as one of the most important vocations, and teachers have long been viewed as valuable national resources. Thus, teachers are well respected based on two main criteria: they are well-prepared for their profession and they are highly trusted with "sustainable leadership" (Sahlberg, 2007).

Teacher education was established in the middle of the 19th century, because the appropriate pedagogical training should be provided to teachers. The reforms in teacher training in Finland was essential to embracing the implementation of comprehensive schooling (Aho,

Pitkänen, & Sahlberg, 2006) Also, all Finnish teacher training, including primary school teacher training, was moved moderately to universities after 1971 (Kansanen, 2003). Teachers at primary schools are certified to complete a master's degree majoring in educational science since 1979 (Aho et al., 2006; Niemi & Jakku-Sihvonen, 2006; Sahlberg, 2007). Finnish teacher education is a two-tier programme, containing a three-year bachelor's degree and two-year master's degree. In that sense, they need to write bachelor and master level theses. The five years program has 300 European Credit Transfer System [ECTS] credits (Sahlberg, 2010; the University of Helsinki, 2016). A unique feature of Finnish teacher training is the emphasis on research-based curriculum (Hökkä & Eteläpelto, 2014; Tryggvason, 2009). The teacher training gives a solid foundation in research and theoretical commitment, it makes student teachers able to cope with daily teaching and classroom situations (Kansanen, 2007). The teacher training stresses research-based, academically preparation, so student teachers develop analytical skills, systematic approaches, insightful discussions and reflective practices (Niemi & Jakku-Sihvonen, 2006; Sahlberg, 2007). Also, student teachers need deep knowledge of the most recent research in the class subjects they teach and need to be familiar with the latest research on different typical topics. Those works lead the student teachers to internalize a research-oriented value toward their work (Niemi & Nevgi, 2014). The value over teacher preparation relies on "the idea of research-based teacher education" (Moon, Vlăsceanu, & Barrows, 2003). Hence, writing theses is part of teachers' profession, keeping teachers current with changes and forming them to find solutions for educational challenges.Then, other characteristics, such as trust and autonomy, can be produced when teachers are well qualified. Teachers' preparation which integrates research based learning prepares teachers to use research and research-derived competencies in their classroom teaching and decision-making (Westbury, Hansén, Kansanen & Björkvist, 2005). Teachers are also sometimes involved in making decisions about curriculum development, and the basis of quality teaching and how to access students' growth is developed with the combination of teachers' research based learning and practical experience.

In teacher training, practical training also plays an important role. Student teachers work not only in theory but also in practice in the classroom with students. The Finnish curriculum aims to connect theory and practice to develop pedagogy, didactics and content of knowledge intimately (Kansanen, 2007). Hence, student teachers in Finland must get guided teaching practice, attending four teaching practice periods of approximately twenty-five ECTS in total. One ECTS is equal to 25 to 30 hours of study (European Union, 2015) . Hence, if I count 28

hours per one ECTS, it is about 700 hour practice, 20-24 weeks in total, which is over half a year. In Finland, the universities which have teacher education courses have teacher training schools in the neighbourhood, which are called Norssi schools in Finnish. Then student teachers need to do teaching practice there with a trainer teacher. Norssi is not special for students, it is one of the normal public comprehensive schools. So it means that the students who live near those schools are attending them, students are therefore not specially selected to attend those schools. One important Finnish integrative teacher training is to give opportunities to student teachers to visit schools as early as possible (Kansanen, 2007). The observation visit helps them become familiar with their future environment. The goal of the visit is to motivate them to engage passionately in pedagogical learning from the beginning to the end of their studies (Uematsu-Ervasti, 2019). I would like to explain teaching practice in detail, how teaching practice happens for 20-24 weeks. In other countries, such as Japan, teaching practice is for 4 weeks to be a primary school teacher and for 3 weeks to be a middle school teacher (MEXT, 2016). It is quite different, and it needs to be explained as a setting. In Finland the number of total study credits can differ slightly in different universities, though all the programmes are mandated by the Ministry. For example, the University of Oulu offers four practice periods for a total of 25 ECTS; School Experience 1 is 2 ECTS for the first year, School Experience 2 is 6 ECTS for the second year, a theme-based practice for the third or fourth year is 6 ECTS, then School Experience 3 is the four or fifth year, 11 ECTS. The first observation sets for 2week and the first and last practice is for six-seven weeks, the second one for thematic-based practice, is up to the educational organization or institutions which the student teachers choose (Uematsu-Ervasti, 2019). Other universities also have 25 or 27 ECTS for teaching practice. Finnish teacher education and practice periods usually emphasize the connections between educational theory practice and research (Kansanen, 2007).

Finnish teachers are commonly known to enjoy trust and autonomy in their work. There are not many systems and trends which are checked or supervised by someone. Hence, in that sense, although testing policies and standardized tests are widely used throughout the world, they are less popular in Finland considering those as reducing teachers' autonomy (Harris, Hargreaves & Fink, 2008). In-service teacher training is not mandatory for every teacher, although the Ministry of Education and Culture states to promote at least three working days outside of school days per academic year (Ministry of Education and Culture, 2016). There are no given compulsory programs depending on specific career experience by the educa-

tional board of the municipality. But the universities, teacher training institutions and organizations provide various programs for in-service training, and the municipality also prepares courses (Ministry of Education and Culture, 2016). As a representation of autonomy being essential to teachers, they can choose and take when they would like to learn depending on their situation, and interest. Some of the courses provide certification or degree, it possibly influences their role and salary. Additionally, once teachers become a teacher, it is not rare that teachers stop working at schools and they go to universities for one or two years to get other additional degrees.

After graduation and even during study, teachers apply to find their job by themselves. When they register in the municipality system, some job offers could come to them but normally the permanent contract is rather hard to get. Hence, many teachers work with yearly contracts or much shorter period contracts. It means that teachers need to develop their own skills to be attractive to principals, and other board members. Paronen and Lappi (2018) showed that teachers in Finland generally change jobs less frequently than professionals in other fields. The vast majority of teachers are satisfied with their jobs. The OECD (2014)'s Teaching and Learning International Survey (TALIS) 2013 results indicated that globally, 91.2 percent of teachers in lower secondary education were satisfied with their job overall in Finland. Teachers in Finland have a lot of freedom when it comes to managing their time. When compared to other OECD countries, Finnish teachers enjoy one of the lowest minimal required amount of instruction/teaching hours and needed time in school in basic and general upper secondary education (Paronen & Lappi, 2018).

The average class size in first and second grade is smaller than in higher grades: in 2012, the average class size in grades 1–2 was 18.7 students, compared to 20.2 students in grades 3–6 (Karjalainen & Lamberg, 2014). It is rare to find classes with more than 24 students, even in metropolitan areas. Multidisciplinary learning is encouraged, which means learning over the subjects, for example arts and English, Finnish, Mathematics and P.E. (R.Valli, P. Valli and Lähdesmäki, 2017). Pair work and group work, as well as physical movement can often be observed in classrooms. Recently, many schools and teachers have started co-teaching with other teachers, not only with special education teachers and studying with other general class students (Malinen & Rytivaara, 2015). In Finland, the digital reform at schools started in the 1990s, so that now most classrooms have electric boards and teachers can use PC and digital

materials (Saari & Säntti, 2017). Also, all schools have laptops and tablets for students' use. Teachers are therefore used to digital devices and students familiar with it in learning (Saari & Säntti, 2017). In the spring of 2020, Covid-19 pandemic pushed them to switch to distance learning, but teachers and students were already familiar with basic online functions and the infrastructure was ready (Finnish National Agency for Education, 2020). This is not to say that this switch was well prepared and without major difficulties, yet teachers and students could switch to online learning within a few days after the Prime Minister declared in public (Stewen, 2020).

2.2 Entrepreneurship education (EE)

Firstly, I need to decide a definition which I will take in my research. There are different definitions by various researchers. Entrepreneurship is the practice of forming new companies or renewing existing ones, especially new businesses, in response to identified possibilities (Onuoha, 2007). According to Schumpeter (1965), entrepreneurs are individuals who use technical and/or organizational innovation to take advantage of market opportunities. Schumpeter focuses on innovation (Stevenson, 2006). Hisrich (1990) defined that an entrepreneur is identified as a person who takes initiative and thinks creatively, can organize social and economic processes to put resources and situations to practical use, and is willing to take risks and fail. According to Bolton and Thompson (2000), an entrepreneur is someone who is habituated to creating and innovating in order to make something of recognized value out of perceived opportunities. There is a spectrum in business elements. My interest is in education, originally, I found Entrepreneurship education from the perspective of students' agency and initiative in their lives. So I developed this definition for this research, it is formed mainly with the European Commission's definition. Entrepreneurship is the individual's competence (ability/sense) to turn ideas into action. It includes creativity, innovation and risk taking, as well as the ability to plan and manage projects in order to achieve goals (Finnish Ministry of Education, 2009; European Commission, 2005; FFE-YE, 2012). It is adopted in daily life, not only in business. Also, it is for all ages, a part of lifelong competence.

Entrepreneurship education is also defined in many ways around the world. Mwasalwiba (2010) analyzed a total of 20 articles for his study on the concept of Entrepreneurship education, although only a few authors attempted to define Entrepreneurship education directly. Entrepreneurship education, according to Fayolle and Gailly (2008), is something that broadens an in-

dividual's perspective and expands his or her knowledge. Tan and Ng (2006) state that Entrepreneurship education is a multifaceted issue that encourages people to think creatively and cross-functionally. Fayolle and Toutain (2013) are attempting to define Entrepreneurship education based on four concepts that closely resemble the Commission's definition. Learning to understand the interplay of many social interactions, learning to navigate and navigate in dynamic contexts, learning to build and review knowledge, and learning to turn ideas into action are their basic principles in Entrepreneurship education. There are common threads, such as expanding, building, developing people's knowledge, attitude and skills somehow. I take the definition from Finland, originally European Commission (2005), because it is most relevant with my definition of entrepreneurship. Entrepreneurship education, which is a concept which encompasses training for entrepreneurship (Finnish Ministry of Education, 2009). Entrepreneurship education is formed by these components; an active person with initiative, an entrepreneurial learning environment, training and education, and bold and enterprise-promoting policy in society. Entrepreneurship education fosters entrepreneurship at all levels of society and also helps businesses grow and thrive. Positive attitudes, basic entrepreneurial knowledge and abilities, and an entrepreneurial mode of operation are emphasized in general education (Finnish Ministry of Education, 2009).

2.2.1 Entrepreneurship education in general

As follows the definition of Entrepreneurship education, it refers to wide-ranging work done within the educational administration with a view to enlarging entrepreneurship. Entrepreneurship education is provided and supported by many labour market stakeholders (Finnish Ministry of Education, 2009). Entrepreneurship education is the focus of an ever-increasing number of publications, reports, conferences, and conference proceedings. Since it is a hot topic on the political agenda, projects are sprouting up around the world, developed by universities and other higher education institutions on a national and European scale. OECD and European Commissions are having strong leadership to promote Entrepreneurship education and Enterprise and Industry Directorate General (2012) invested huge amounts of money in Entrepreneurship education programmes at the European level (Fayolle, 2013). Although most entrepreneurship programs and courses are taught at the university level due to the characteristics of business and working life, primary and secondary schools are seeing an increase in initiatives and interventions nowadays (Fayolle, 2013).

I focus on primary schools (1-6th grades) of basic education (1-9th grades). Entrepreneurship education in primary schools has started in many places all over the world, although many of them tend to focus on the business-related part of Entrepreneurship education. For example in Nigeria, there is research about Entrepreneurship education, which is focusing on business and market understanding (Ememe, Ezeh & Ekemezie, 2013), in Morocco, an Entrepreneurship education research, which is measured the development of three outcome sets of skills: non-cognitive entrepreneurial skills, cognitive entrepreneurial skills, and intentions to become an entrepreneur through program experience and before-after questionnaires (Hassi, 2016), in Mexico, Cárcamo-Solís and colleagues (2017) examined a Mexican educational sub-programme, "My first enterprise: Entrepreneurship by playing" which is designed to promote entrepreneurship at the primary school level. In European countries, according to the Eurydice report (European Commission, 2012), in Spain, several autonomous communities are developing specific entrepreneurship programmes and practical implementation guidelines and tools, for primary school up, in German-speaking Community of Belgium, a network of education and business representatives (Studienkreis Schule & Wirtschaft) emphasizes on cooperation and the transition between school and work. One-day extracurricular activities, (*Technikids* for 5th and 6th year of primary school and *Dream Day* for 5th or 7th year of upper secondary school) set aside students to be familiar with the jobs of different professions. Entrepreneurship education is supported and provided by not only the government and municipalities, but also non-profit organizations and private companies (European Commission, 2012). In Finland, Economy and Youth TAT, a non-profit organization, collaborates with municipalities and companies and provides "Me and My city (yrityskylä)" to about 80 % of 6th graders students (Economy and Youth TAT, 2021). It is a miniature society, the program for 6th graders has 10 modules and one-day experience in the miniature city. The learning environment is where students work in a profession and earn money for their work. In addition, the students act as consumers and citizens, as part of Finnish society (Economy and Youth TAT, 2021). Me and My city offers students in grades six and nine positive experiences of working life, the economy and society and encourages entrepreneurship. Another non-profit organization, Junior Achievement in Finland provides various Entrepreneurship education programs and tools, "Little entrepreneurs (Pikkuyrittäjät)" is one of them for primary school teachers and students (Nuori Yrittäjyys ry, 2021). It provides experience to establish a company.

In discussions of Entrepreneurship education, there is still much complexity about the scope, objectives and methodologies that are most suitable for the development of an entrepreneurial

mindset. When educators promote Entrepreneurship education, the term entrepreneurial mindset appears. I add an explanation about entrepreneurial mindset because it relates to getting teachers' understanding and reaction to entrepreneurship. Although lots of researchers discuss how to develop students' entrepreneurial mindset, teachers' entrepreneurial mindset is also important. If teachers have an entrepreneurial mindset, it influences the students' mindset (Zen, Chen, Cheung & Peng, 2019). McGrath and MacMillan (2000, p. 32) defined that entrepreneurial mindset is "the ability to sense, act, and mobilize under uncertain conditions". Despite the fact that teachers' understanding of entrepreneurship education has expanded and become more positive, many lack the training and ongoing professional development necessary to teach this mindset (Seikkula-Leino, Ruskovaara, Ikavalko, Mattila, & Rytkola, 2010). Ferrero and Fioro (2014) stated that entrepreneurial mindset is all about analyzing the world, its opportunities, and possibilities, as well as comprehending how an individual can contribute to the building and advancement of the economic and social system, and finally putting ideas into action to achieve goals. Ireland, Hitt and Sirmon (2003) reached the conclusion that having an entrepreneurial mindset can help promote flexibility, creativity, continuous innovation, and renewal (Kouakou, Li, Akolgo & Tchamekwen, 2019). The mindset could be fostered in Entrepreneurship education for teachers and students.

2.2.2. Entrepreneurship education in Finland and Finnish curricula

My scope is Finland, so I will explain it. Entrepreneurship education is included in the Finnish national core curriculum and also the North Ostrobothnia area (including Oulu) has a regional plan to adopt Entrepreneurship education from early childhood to higher education to implement it (Eskola, 2016).

The history of Entrepreneurship education in Finland can be separated into three phases. When the concept of economic education was initially introduced to the Finnish educational system in the 1950s and 1960s, it was the first step toward Entrepreneurship education. The second step happened in the 1980s with entrepreneurial training. The third step was taken in the 1990s when the great recession happened, the introduction about the concept of Entrepreneurship education came out. The economic recession had accelerated the emergence of Entrepreneurship education because of the difficulty in getting jobs. Instead of looking for employment in the service of others, the education system should prepare and teach people to explore employing themselves as a career option (Finnish Ministry of Education, 2009). In

1994-1995, Entrepreneurship education was introduced to the core curriculum at various school levels, and it was first referenced on the internet in 1997 (Finnish Ministry of Education, 2009). Finland was one of the first countries to develop Entrepreneurship education on a national basis, and it was also one of the first to adopt an Entrepreneurship education plan. In 2009, the Finnish Ministry of Education defined Entrepreneurship education in the guideline (2009, p 6), "Entrepreneurship education is part of lifelong learning; in it, entrepreneurial skills are developed and supplemented at different points in life. It is a question of life management, interaction, self- guided action, a capacity for innovation, and an ability to encounter change". Several regional Entrepreneurship education strategies have followed the national strategy, and many Finnish Entrepreneurship education organizations have used the same definition. In 2017, the Ministry examined the strategy and published new Entrepreneurship education guidelines in the spring. The Finnish Ministry of Education (2017) released a supporting document for the Entrepreneurship education guidelines. The document's goal was to establish, concentrate, and steer Entrepreneurship education initiatives in Finland at various educational levels. It was more of a toolset for educational institutions to adopt than a straight document relating to curricula (Ministry of Education and Culture, 2017). Entrepreneurship education could be found from the point of the Finnish curricula. The major form of Entrepreneurship education in Finland varies depending on the level of education. Since this thesis is focused on the primary school level, I review the comprehensive school level in Finland, where Entrepreneurship education has been one of seven cross-curricula themes from 1994. The national core curriculum for basic education states the objectives and central contents of cross-curricular themes and subjects (Finnish National Board of Education, 1994). The Entrepreneurship education theme there is called "Participatory citizenship and entrepreneurship" at the primary school level. The national core curriculum is the foundation upon which local and regional education providers build their curricula, though they are able to add their own emphasis (Finnish National Board of Education, 2004). Then, the Finnish national core curriculum for basic education which was devised in 2014 and started to implement has entrepreneurship and working life as one of the seven transversal competencies (Finnish National Board of Education, 2014).

In recent years, Entrepreneurship education has become a more popular concept in teacher education, because the element is included in the Finnish national core curriculum. Teachers are at the core of the entrepreneurial setting in educational institutions, thus they must have the

skills and ways to use them effectively (Fulgence, 2015). Teachers play a different role in Entrepreneurship education than they do in traditional classrooms. Entrepreneurial learning, according to Hynes and Richardson (2007), is focused toward "doing" rather than "thinking," and this orientation offers pedagogical challenges for teachers when conducting Entrepreneurship education because it includes more complexity than traditional teaching. Teachers, according to Carrier (2005), should allow for more creative development and act more like entrepreneurs than educators. It is important that teachers aim to establish a learning environment that is entrepreneurial, creative, and open. Teachers, according to Hägg and Peltonen (2014), should be open-minded and let students play a greater role in the process, meaning that teachers should become more of a facilitator than a solution provider. In accordance with European Commission (2012), about a third of European nations have practical guidelines for teachers to use while teaching entrepreneurship. The entrepreneurship's guidelines are part of the national curriculum in Estonia and Lithuania, but not in Finland as part of the curriculum, but tools are suggested by the Ministry of Education and Culture (2017). In the Finnish context, it is linked to school autonomy, and so teachers' implementation strategies may be different. An entrepreneurial teacher's role, according to the European Commission (2014), is to be inspirational, open-minded, courageous, responsible, and flexible. They can also be the rule-breakers who bring about change if necessary. Their role is to experiment with various active learning approaches, as entrepreneurial competencies require those methods. According to Seikkula-Leino (2006, 2007), there are challenges to promote Entrepreneurship education among teachers' initial training, in-service training and continuing professional education. They should evolve into the direction where entrepreneurship education has its place and it is compulsory but motivating for the teachers (Ruskovaara & Ikävalko, 2008). Teachers' awareness of Entrepreneurial education has increased, and their attitudes toward the topic become more positive, but they still lack sufficient knowledge of the goals, topics, and work methods of Entrepreneurship education (Seikkula-Leino, 2007). Teachers still require clear examples of how to apply the theme in their classrooms. However, when teachers' attitudes are improved and awareness has increased, it is time to take action. The challenges are to embrace this positive development and set concrete goals to achieve them (Ruskovaara & Ikävalko, 2008).

Nevertheless, the number of Entrepreneurship education research in Finland has been increasing in recent years, still there is a lack of research at primary school level and focusing on primary school teachers in Finland (Ruskovaara, 2014). Entrepreneurship education contents and how to implement it in classrooms are discussed in some literature (Ruskovaara & Pihkala,

2013), but there is still a lack of research about teachers' value, and mindset. Also, there is no research to be found about making mistakes, and specific entrepreneurship competence, coping with ambiguity, uncertainty and risk, although Komulainen, Korhonen & Räty (2009) discussed risk-taking abilities of middle schoolers in Entrepreneurship education context through gender research scope. My research contributes to those gaps in the field.

2.3 Entrepreneurship Competence Framework (EntreComp)

Entrepreneurship and Entrepreneurship education have lots of definitions and have become a big trend in the world, many researchers try to formulate clear understanding in various ways. In this subchapter, I picked one of the frameworks to set my research background. As stated above, my preferred definition of Entrepreneurship education is a concept which encompasses training for entrepreneurship (Finnish Ministry of Education, 2009). Entrepreneurship education is formed by these components; an active person with initiative, an entrepreneurial learning environment, training and education, and bold and enterprise-promoting policy in society. The definition of entrepreneurship, which I took is the transformation of "idea into actions", because it does not only serve for running companies, it is suitable for education in general and primary school students. Studying the concept in detail, I found the Entrepreneurship Competence (EntreComp) Framework in the paper of European Commission (Bacigalupo, Kampylis, Punie & Van den Brande, 2016) , which I will introduce here. Before I came to know this framework, I had not thought that making mistakes relates to specific competence, but I expected that entrepreneurial context had something which connects making mistakes. Then actually one of the Entrepreneurship Competences is Coping with ambiguity, uncertainty and risk.

Entrepreneurship Competence Framework has 3 competence areas (Ideas & opportunities, Resources and Into action) and 15 competences (in the center of the frame) which unfold 442 learning outcomes on 8 levels of proficiency, and is quite concrete and easy to understand. One of the competence areas, Into Action, has the competence which I focus on in this paper, Coping with ambiguity, uncertainty and risk (the red arrow shows in the frame).

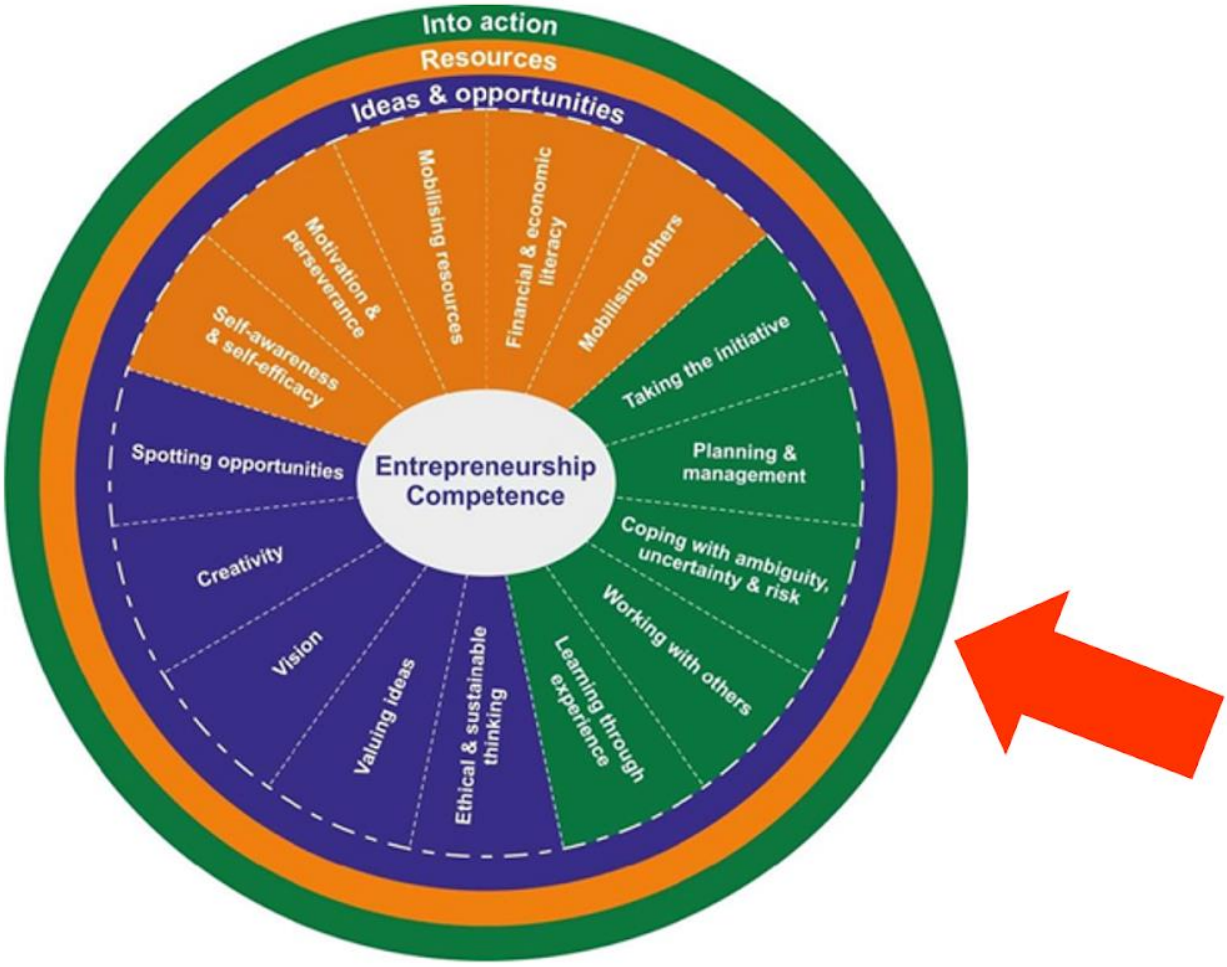

Figure 2. Areas and competences of the EntreComp conceptual model (Bacigalupo, Kampylis, Punie & Van den Brande, 2016)

In the EntreComp framework the competences are equally important. There is no order and acquisition process or hierarchy among them. Depending on where and how EntreComp framework is applied, it is realistic to assume that some competencies will be prioritized more than others, or that the model would be altered to reflect a specific entrepreneurial learning process or experience (E.McCallum, L.McCallum, Weicht & Price, 2018). The 15 competences are also intertwined and interconnected and should be treated as parts of an entire group. It does not suggest that the learner should acquire the highest degree of proficiency in all 15 competences or have the same proficiency across all the competences. However, the framework implies that entrepreneurship as a competence is composed of 15 building blocks (Bacigalupo, Kampylis, Punie & Van den Brande, 2016).

As McCallum and colleagues (2018) mention, entrepreneurship is a competence, and it is defined as the ability to act upon opportunities and ideas to create value for others. Competence means "a set of knowledge, skills and attitudes" in the context of the EntreComp study (Bacigalupo, Kampylis, Punie & Van den Brande, 2016). EntreComp framework acknowledges the opportunity to be entrepreneurial in any context, from school curriculum to workplace innovation, community initiatives to applied learning at university. In the EntreComp framework, entrepreneurship competence is both an individual and collective capability. EntreComp can be utilized to encourage entrepreneurial learning in various settings, including civil society, businesses, education, youth work, communities, start-ups, and individuals. The EntreComp framework's ambition is to form a bridge between education and work, by providing a better recognition and promotion of entrepreneurship competence in Europe. The EntreComp framework gives an overview of the different interdepended competences. These competences are designed to help you think about entrepreneurial skills and attitudes. They can guide when people design new activities and/or models to use or adapt for learning and evaluation (E.McCallum, L.McCallum, Weicht & Price, 2018) .

To contextualise this framework, it is important to know that the entrepreneurial capacity (the skill to spot, recognize and absorb opportunities) as necessary individual characteristic to be an entrepreneur (Bart, Valentina & Ammon, 2011) of European citizens and organisations has been developed as one of the key policy objectives for the EU and Member States for a long time. There is a growing recognition that entrepreneurial skills, knowledge, and attitudes can be learnt, leading to the widespread development of entrepreneurial mindsets and culture, which benefits both individuals and society as a whole. The growing recognition that entrepreneurial skills, knowledge and attitudes can be learnt leads to the widespread development of entrepreneurial mindsets and culture, which benefits both individuals and society as a whole. In 2003, the European Commission first stated the importance of Entrepreneurship education in the European Green Paper on Entrepreneurship in Europe. The European Commission had recognized a 'sense of initiative and entrepreneurship' as one of the eight key competences[1] necessary for all members of a knowledge-based society by 2006. Then the 2008 Small Business Act for

[1] The European Reference Framework of Key Competences for Lifelong Learning defined eight key competences: Communication in the mother tongue; Communication in foreign languages; Mathematical competence and basic competences in science and technology; Digital competence; Learning to learn; Social and civic competences; Sense of initiative and entrepreneurship; and Cultural awareness and expression (European Commission, 2018).

Europe, the 2012 Communication on Rethinking Education, the 2013 Entrepreneurship Action Plan 2020, and lately the New Skills Agenda for Europe, have kept the need to promote Entrepreneurship education and entrepreneurial learning under the spotlight. Although the interest in entrepreneurial capacity has been growing rapidly, there is still no general agreement of the understanding on what the different elements of entrepreneurship as a competence are, after the 2006 Recommendation on 'Key competences for lifelong learning' for around a decade. About half of European countries use the European Key Competence definition of entrepreneurship, according to the 2016 edition of the Eurydice Report on 'Entrepreneurship Education at School.' The definition is "the ability to turn ideas into action"(Morselli & Ajello, 2016). A third of the countries utilize their own national definition, while nearly ten countries lack a nationally accepted term. In addition, Eurydice identifies a lack of comprehensive learning outcomes for Entrepreneurship education as one of the biggest barriers to the development of entrepreneurial learning in Europe. As a result, there is a pretty obvious need to define and describe entrepreneurship as a competence; to establish a reference framework describing its elements in terms of knowledge, skills, and attitudes; and to provide European citizens with the tools they need to evaluate and develop this key competence. In this context, the Joint Research Centre (JRC) in European Commission, on behalf of the Directorate General for Employment, Social Affairs, and Inclusion, launched the Entrepreneurship Competence Framework study in January 2015. One of EntreComp framework's main goals was to create a shared conceptual framework that may assist in the development of entrepreneurial competence at European level (Bacigalupo, Kampylis, Punie & Van den Brande, 2016).

Table 3: EntreComp Overview

Area	Competence	Levels of proficiency: Foundation	Intermediate	Advanced
	Mobilising resources	Learners can find and use resources responsibly.	Learners can gather and manage different types of resources to create value for others.	Learners can define strategies to mobilise the resources they need to generate value for others.
	Financial and economic literacy	Learners can draw up the budget for a simple activity.	Learners can find funding options and manage a budget for their value-creating activity.	Learners can make a plan for the financial sustainability of a value-creating activity.
	Mobilising others	Learners can communicate their ideas clearly and with enthusiasm.	Learners can persuade, involve and inspire others in value-creating activities.	Learners can inspire others and get them on board for value-creating activities.
Into action	**Taking the initiative**	Learners are willing to have a go at solving problems that affect their communities.	Learners can initiate value-creating activities.	Learners can look for opportunities to take the initiative to add or create value.
	Planning and management	Learners can define the goals for a simple value-creating activity.	Learners can create an action plan, which identifies the priorities and milestones to achieve their goals.	Learners can refine priorities and plans to adjust to changing circumstances.
	Coping with uncertainty, ambiguity and risk	Learners are not afraid of making mistakes while trying new things.	Learners can evaluate the benefits and risks of alternative options and make choices that reflect their preferences.	Learners can weigh up risks and make decisions despite uncertainty and ambiguity.
	Working with others	Learners can work in a team to create [illegible].	Learners can work together with a wide range of individuals and groups to create value.	Learners can build a team and networks based on the needs of their value-creating activity.
	Learning th… experien…	…ers can recognise what they …learnt through taking part in …creating activities.	Learners can reflect and judge their achievements and failures and learn from these.	Learners can improve their abilities to create value by building on their previous experiences and interactions with others.

Figure3. EntreComp Overview (Bacigalupo, Kampylis, Punie & Van den Brande, 2016)

In the EntreComp Overview (Figure.3), the foundation level, in the levels of proficiency, Coping with ambiguity, uncertainty and risk has "Learners are not afraid of making mistakes while trying new things"' (the red arrows shows). Hence, the competence shows the relation with 'making mistakes' in the table (Bacigalupo, Kampylis, Punie & Van den Brande, 2016).

One other EE conceptualisation bringing complementary elements to the EntreComp is that of Lackéus (2015), who conducted a literature review and qualitative research about entrepreneurial competencies. The entrepreneurial competencies are explained with operational competencies, which means that routine value creation, such as process management and execution, optimization and incremental improvements and the entrepreneurial competencies are explorative value creation: innovation, new offerings, continuous learning and method development (Lackéus, 2015). The author presents a framework which categorizes competencies in 3 sections (Knowledge, Skills and Attitudes) that influence the willingness and ability to perform the entrepreneurial work of new value creation. This definition is formed with much of the literature on competencies in general as well as on entrepreneurial competencies (Sánchez,

2011, Burgoyne, 1989, Kraiger et al., 1993, Fisher et al., 2008). The entrepreneurial competencies are in a spectrum where those sections and related competencies are ordered from most cognitive competencies to non-cognitive competencies. Then in the part of non-cognitive competencies, one of the subthemes in Attitudes is *Uncertainty, ambiguity, tolerance.* He interpreted it, " "I dare". Comfortable with uncertainty and ambiguity, Adaptable, Open to surprises" (Lackéus, 2015, p13). When comparing this review with the EntreComp Framework, it is not specific competence and there are not much detailed descriptions and interpretations.The EntreComp Framework has detailed explanation for each competence and also specific steps on how to get to different proficiency levels, hence it is easy to understand what exactly includes the competence in reality. There is not much information about the uncertainty, ambiguity, and tolerance of Lackéus's framework, it is hard to examine entrepreneurial competencies and uncertainty, ambiguity and tolerance, what they mean and how to use them in my research. I would like to examine specifically how teachers understand them, therefore I chose the EntreComp Framework because of the clear definition as a competence. But uncertainty, ambiguity and tolerance must be faced in the learning process of Entrepreneurship education and learners experience them in Lackéus's entrepreneurial education and its outcomes model (2015). Making mistakes was not mentioned there, but hidden experience through Entrepreneurship education.

2.4 Making mistakes

Making mistakes is located in the Entrepreneurship Competence framework, coping with ambiguity, uncertainty and risk. While Entrepreneurship education and competences in general are of interest in this thesis, my focus is especially on one of the competences: the meaning of coping with ambiguity, uncertainty and risk to teachers and teachers' reaction to general mistake making in Finnish primary schools. In this section, I explain how 'making mistakes' is recognized and understood.

Busi (2017) said in the educational context of improvisation, "towards accepting mistakes, it is necessary to create an environment where everybody can make mistakes and fail safely. This requires teachers and students to suspend judgement and to use any mistake to create an opportunity" (Busi, 2017, p.17). In that sense, a key point here is that the judgement determines what is 'mistakes', and is the key for recognition of 'mistakes'. This type opportunity

creation in dealing with mistakes can often be seen in drama education, where the improvisational skill and the courage to just be there in the uncertainty, and to take risks are all significant elements of good drama work (Østern, 2017). Hence, drama, especially improvisation, could be useful to illustrate and understand what are 'mistakes' and how they can be perceived and used differently.

In other education contexts, learning English as a foreign language, Deswarni (2017) said that the fear of making mistakes causes a mental block in the learners' brain (affective filter). This blocks students from having difficulty learning English. Since students are the central role in the learning process, teachers need to support them to turn into positive assumptions with optimistic suggestions. Teachers' reactions could help students to appease worry or fear of making mistakes. Each of the students have their own ability and different types, and have their own experiences in learning. Teachers' reaction could be a factor to make it better or worse. Therefore, if teachers could understand the importance of and learn methods to encourage students, it could help to alleviate students' worry or fear of making mistakes (Deswarni, 2017). In that sense, making mistakes could be mitigated by teachers' reaction and students' internal changes by the experiences.

Having a brief but informative look in the medical field, according to Crigger (2005), nurses make mistakes in practice, but for them the stakes are even higher since they live with the expectation of perfection. There is a disparity between reality and expectation, which was brought in that study to examine the current attitudes toward mistakes in practice. There are two explanatory models of the origin of mistakes: The Perfectibility Model and The Faulty System Model. The Perfectibility Model means that any error or harm is caused by a lack of knowledge or motivation on an individual practitioner. The Faulty Systems Model presents a broader explanation of human error. The Faulty System Model is more comprehensive and more efficient for managing mistakes (Crigger, 2005). In that way, mistakes could be seen as coming from human error rather than from a lack of knowledge or motivation of the individuals. In relations with the education field, mistakes are also identified as a consequence and/or outcome, for example academic results, learning outcome and behavior (Käfer, Kuger, Kulieme & Kunter, 2019). They are decided by those who made 'mistakes' and/or by others, such as teachers, parents and other students. It could be deduced also for students, from the medical study, that they can make mistakes for a variety of reasons, perhaps in a lack of

knowledge or motivation, or just as a human error. Regardless, mistakes are often evaluated in the light of expectations.

As illustrated by the drama education and English learning examples, if teachers' and students' acceptance is broader, if expectations are less strict, and if there is awareness of students' mental blocks in face of difficulties, the negative correlation to mistakes could be deemphasised. Mistakes could be identified by someone's recognition and the consequences could be mitigated and also amplified by someone, such as a teacher. Mistakes happen naturally to some extent when people try something, so it is important to be mindful about how people perceive the mistakes, and treat them when they recognize it as a mistake. How someone has experienced making mistakes will have an influence later in life relating to how their 'mistakes' were identified and managed.

To summarize, in the Finnish education system, entrepreneurship is included in the national core curriculum as a part of transversal competences. It is increasingly emphasized in the EU and in Finland, although there is not enough research at primary school level, and teachers' attitude and mindset are focused. Due to the educational context of Finland, Finnish primary school teachers are assumed to provide quality teaching and then they get trust and autonomy from the government, municipality, school and parents. This freedom could allow them to consider or implement Entrepreneurship education. Entrepreneurship is the competence which transforms the ideas into action, and in the EntreComp Framework one of the competences is coping with ambiguity, uncertainty and risk. The point is what people recognize and identify as a mistake is not factually standing as a mistake, but the recognition of it as such makes it into a mistake.

Here is a figure which describes the concepts detailed in the later part of the Theoretical Framework (2.3 and 2.4), and how they connect each other. Making mistakes as a main focus is part of one of the competences of the EntreComp framework that is Coping with ambiguity, uncertainty and risk.

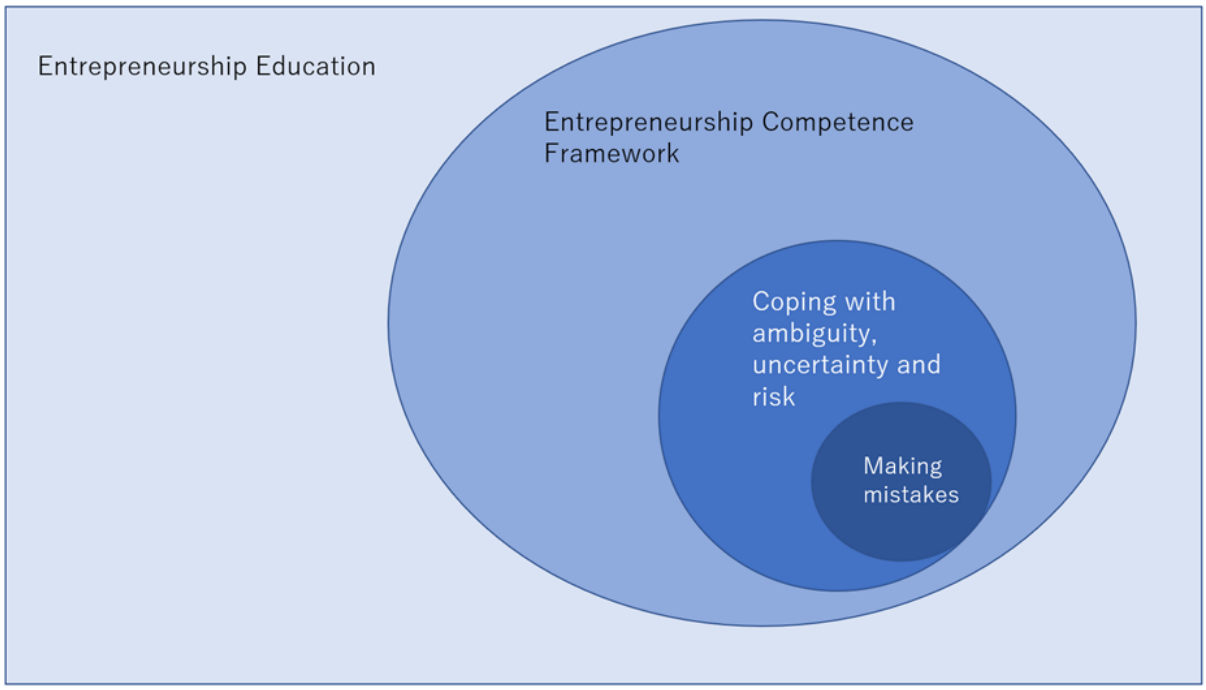

Figure 4. Connection of the different concepts in the theoretical framework

The next chapter presents Methodology, how I collect the data, who are participants to my research and how I analyze the data. I will explain the process in detail.

3 METHODOLOGY

Since I approached my research in a problem-solving fashion, I was particularly interested in tackling a topic which had implications that were personal to me: the issues of students in Japan. Because this problem is pervasive in Japan, but not so much in Finland, I wanted to approach it in a way that would address it and create the most helpful ways. Pragmatism is therefore my research approach of choice, where I am interested in the understanding and perceptions of teachers, practically. This approach also allows me the freedom to make choices that would best suit my aims, where the most practical route was often the preferred one (Kaushik & Walsh, 2019). Pragmatism supports ways that get best results for this research and related aims. In that case, the choice of thematic analysis as a method of inquiry leaves me room to implement my own epistemologies and ontologies and tackle the problem in the way I most see fit. As a research paradigm, pragmatism is based on the proposition that researchers should use the philosophical and/or methodological approach that works best for the specific research problem that is being examined (Tashakkori and Teddlie, 1998). The quality

of dealing with a situation in a sensible way that fits the actual situation, rather than following fixed theories, ideas, or rules, is referred to as pragmatic (Rai & Lama, 2020).

This informs why this qualitative study is interpretivist as I aim to holistically understand participants' understanding of coping with ambiguity, uncertainty and risk, and also especially making mistakes. Under those choices, I adopted thematic analysis to analyse my data, which allows "analytic sensibility" (Braun & Clarke, 2006), where decisions are to be made during thematic analysis regarding the design of the study. Here, I will present the process that I followed for data collection and analysis.

3.1 Thematic Analysis

This method suits for conducting qualitative research. It is versatile since it enables the data collection situation to adjust the questions as the respondents and the scenario require (Rai & Lama, 2020). I adapted Braun and Clarke's thematic analysis approach in this research. Thematic analysis is a flexible method aiding to discover the patterns in qualitative data (Braun & Clarke, 2013). This can be observed in a six-step process that "does not prescribe methods of data collection, theoretical positions, epistemological or ontological frameworks" (Braun & Clarke, 2013). The researcher can use thematic analysis to approach the data inductively or deductively. It can be used to conduct either a descriptive or a critical analysis. Thematic analysis can be used for nearly any sort of data.

Thematic analysis is an independent qualitative descriptive approach, which is defined as "a method for identifying, analysing and reporting patterns (themes) within data" as an independent qualitative descriptive approach (Braun & Clarke, 2006). Thematic analysis, as a versatile and effective research methodology, is said to provide a comprehensive and detailed, though complex, description of the data (Braun & Clarke, 2006). Clearly, thematic analysis is helpful for identifying common threads that emerge across an interview or series of interviews (DeSantis & Ugarriza, 2000). It enables researchers to identify and organize relevant themes and subthemes, which could be used to as units of analysis in subsequent detailed readings of a data set, allowing researchers to gain a deeper understanding of the data and observe the meanings associated with the concepts that emerge from the interviews (Braun & Clarke, 2013). Hence, the central operation of thematic analysis is thematization. The codes are often composed of words or short phrases that symbolically assign a "essence-capturing, and/or evocative attribute" (Saldaña, 2016) and are seen interactively, allowing the researcher

to make changes throughout the coding process. Braun and Clarke (2006) said that thematic analysis could apply minimal description to data sets, and interprets different aspects of the research (Vaismoradi, Turunen & Bondas, 2013).

Braun and Clarke (2013) suggested the sixth stage of thematic analysis, which I followed; Familiarizing oneself with the data, Generating Initial Codes, Searching for Themes, Reviewing Themes, Defining and Naming Themes, Producing the Report. These phases guided the steps of thematic analysis, which are presented in the sections to come.

3.2 Data Collection

The data for the research was collected from 15 primary school teachers in the northern part of Finland. I found the interviewees by snowball sampling (Patton, 1990). Practically, I used my contacts to reach teachers by emails. Firstly, I looked for primary school teachers who have already taught or used Entrepreneurship education. I asked a professor who teaches Entrepreneurship education, a friend who works for promoting Entrepreneurship education at school and some comprehensive (primary and middle) school teachers friends to ask me to participate in my research. Then I got some willing teachers, but at that time I realized that it is hard to find only primary school teachers who teach Entrepreneurship education at school, as there are many in middle, upper secondary school and higher education, but not that many in primary school, 1st to 6th graders teachers. Then I have decided to involve other primary school teachers who do not use or teach Entrepreneurship education at school- which is permissible in a pragmatic manner - to use different means to meet my aims. Hence, I conducted interviews with two different groups, one is composed of primary school teachers who have already taught or used Entrepreneurship education and the other is composed of teachers who have not.

The former group has 8 teachers, and the latter has 7 teachers. They collectively work in 9 different schools in the north urban areas of Finland and one of the teachers left the teaching job a few years ago. 9 of the participants are female and 6 are male. They all received masters' degree teacher education in Finland, as is customary in this country (see 2.1.2). Three participants have studied a degree related to Entrepreneurship education at some point in their career. One third of the participants have from 2 to 8 years experience, and two third of them have more than 8 years of teaching experience. Three of the participants have special positions in their schools as one of them is also a teacher trainer, next is also a principal, and the

last one is working as a primary school teacher while also working at the municipality.

Two of the interviewees were met at the same time, others were interviewed individually, so I did 14 interviews in total. The two teachers preferred to do an interview together, because they work at the same school in a similar role. In a pragmatic way, my goal is to listen to teachers' answers in the best way possible through the interview, so if I could offer a better setting where teachers feel more comfortable when they talk together, I was glad to accommodate them. Three of the interviews were held face to face, but others were online, through zoom. The reason why I mainly use online interviews is Covid-19. I was supposed to do all the interviews face to face, but the pandemic situation did not allow it. All of the interviews were held in English, from November of 2020 to January of 2021. Each took around 30 minutes to over 1 hour, an average of 40 minutes.

I used a semi-structured interview for data collection because I am interested in their experiences and opinions, regarding the same general themes. Another essential component when considering interviews as a feasible research option is the pragmatic concerns of accessibility to participants (Denscombe, 2003). While sticking to certain interview themes, the interview questions were not strictly defined, so I could ask more questions to them depending on their answers, and all questions were open. I sent informed consents and some of the interview questions one or two days before to the interviewees via email. The reason why is that I thought teachers needed time to think about Entrepreneurship education, especially coping with ambiguity, uncertainty and risk. Some of them are not familiar with the terms in English and I assumed that the terms might be abstract and not often used in daily teaching. I was mindful that perhaps those points also influenced teachers' ideas and answers. The interviews are conducted in English, and their mother tongue is Finnish.

The design of the interview questions was mainly focusing on coping with ambiguity, uncertainty and risk, and making mistakes at school daily life. Then in the interview, I asked the question from Appendix3, Theme A, B and C in order, to some teachers who do not use or teach entrepreneurship education, and I asked Theme A, B, C and D with arrangement of the questions depending on their experience to others who use or teach. I was interested in answers in the context of Entrepreneurship education, so I asked some questions about understanding Entrepreneurship education in general and Entrepreneurship education experience. In the last part of the interviews, I also showed the Entrepreneurship Competence Framework to

know whether they know the framework or not, which competences they emphasize in their teaching and they think are important to learn for students.

3.3 Data Analysis

Following the six steps of thematic analysis above, I explain how they were manifested in details in my research. For the first and the second stage **Familiarizing oneself with the data and Generating Initial Codes,** I used Zoom recording in online interviews and a voice recorder when I did the interviews face to face. I made transcriptions using the online tool Otter.ai. Then I corrected the transcripts by myself by listening to the interviews again and again, reading the transcripts simultaneously. This process allowed me to familiarize myself well with the data. When it was done, I coded the data. Firstly, I put all the transcriptions from the Otter.ai to the NVivo software. Before reading the transcription in NVivo, I was already rather aware of the contents from the interview. Therefore several codes came to mind naturally which I imported as code in NVivo before reading the transcripts to code. In that sense, this part of the coding can be deemed deductive. Examples of the deductive codes are Entrepreneurial project and Working with others. Then I read the transcriptions and generated new codes inductively. While there are more than 80 new inductive codes, a much bigger number than my deductive codes, I could say that I did the coding with a mixture of deductive and inductive ways. Examples of inductive codes are Safe atmosphere, Be human and Learn from failure. These mixed coding choices were pragmatic. Each code was reviewed to assess for similarities and differences of teachers' responses.

The third stage is **Searching for Themes** but in this stage, I pragmatically looked more broadly for groupings. I checked all the codes (both deductive and inductive) and renamed, combined and renamed again some of them. I tried to find similarities and relation between codes, repeatedly. I also made grouped codes, where I put codes with similar meaning to one grouped code. At the same time and for more precision, I read the sentences where the codes come from and modified the code name. I wrote the description to each code to specify what the codes exactly mean in NVivo. Then I have looked for patterns across the codes that I developed. I checked if they make sense within the data that they are used for. Some of the codes were not relevant directly to my research questions, so I put them into a reserve box. Examples of such codes are STEAM, Inclusive, ICT skill and Empathy. Then, I grouped into categories selected codes, using single codes or grouped codes. Once this first grouping/categorising was done, I grouped further the categories to form candidate subthemes. In other

words, I made grouped codes and categories to produce subthemes. Themes were inductively formed from the content of the data reviewed (Braun & Clarke, 2006). The way I organised codes to grouped codes, categories and subthemes goes as follows. For example, I made the Trainer category, from a grouped code, Specific students' skills/competences. The grouped code is composed of many single codes, such as Creativity, Working with others and Self-awareness and self-efficacy. Then the category Accept mistakes has come from 6 single codes; Move on, keep going, Not such a big deal, Adults (Everyone) make mistakes, Laugh the mistake off, Learn from failures, Like to take risks. Attitude is one of the subtheme candidates, composed of codes; Be human, Be present, Be flexible, Teacher's job is coping with ambiguity, uncertainty and risk, and some grouped codes. After all the codes, grouped codes and categories were built up, then I considered what kind of themes can be seen from them.

The fourth stage is **Reviewing Themes**. I made a mind map in miro (web tool) to understand the relationship among codes, categories and subthemes visually. Then I organized candidate subthemes, and the main theme. I initially found 4 subthemes: Role, Behavior, Attitude and Skill. Those grouped together yielded the main theme of Teachers' mindset towards coping with ambiguity, uncertainty and risk. I then started checking the quality of the candidate themes after I completed their development. I needed to make sure that the data which composes the theme is consistent and relevant to my research questions. Braun and Clarke (2006) suggested that researchers check that the themes are "internally coherent, consistent, and distinctive". Also, as for Maguire and Delahunt (2017), researchers need to think if the themes make sense, if the themes match the data set and if there are themes within the themes. I looked back at my research questions here, I reexamined the transcripts to make sure that themes were coming from the original data set and to ensure if the themes fit on the interviews (Braun & Clarke, 2006; Denscombe, 2003). Then, I made the decision to remove one of the candidate subthemes, Skill, because I found it is not particularly relevant to my questions. As a result of the evaluation process, I could confirm the data extraction which generated the codes, categories and themes. For example, one of the three subthemes, Role, comes from three categories. They are built up from teachers' different answers. Teachers recognize their job as Guide, Trainer and Carer, it happens at the same time, but not overlapped as a Role, subtheme.

The fifth step is **Defining and Naming Themes**. This is a crucial phase in preparing the themes for the analysis. It is important to check the themes and data to determine whether

they actually do form a coherent narrative about the data. This stage can be enhanced by defining these themes in a few sentences. It also allows the researcher to understand how the data is explained by the themes in relation to the research question (Braun & Clarke, 2006). I made categories from relevant codes and grouped codes, then brought the subthemes from them. The subthemes are Role, Behavior and Attitude and theys are making the one main theme, Teachers' mindset towards coping with ambiguity, uncertainty and risk.

The final step is about **Producing the Report**, based on the evidence from the data. It is essential to communicate the analysis for each theme by showing the data extracts along with the researcher's analysis and "argument in relation to the research question" (Braun & Clarke, 2006). Miles and Huberman (1994) said that the process of the analysis is interlacing through the whole research process. The writing of thematic analysis happens right from phase one and the final part is developed along the way (Braun & Clarke, 2006). My analysis is interpretative. The three sub themes are not hierarchical but lateral. The order does not make specific meanings among Role, Behavior and Attitude. Each step is discussed and examples are supplied for the reader to evaluate the relationship between what was stated to be done and what was really done, in accordance with the features of good thematic analysis as stated by Braun and Clarke (2006). When the analysis is complete, the final draft of the theoretical framework is finalized, and it is decided that theoretical content could be designed to reflect the findings in some ways.

4 FINDINGS

This chapter explains what I found through the thematic analysis, where codes grouping makes categories, and then the categories form three subthemes. Finally, the three subthemes are grouped as a main theme. This chapter is organized into subchapters that explain three subthemes and the main theme that came from the interviews. In the subchapters, I describe some categories under the subthemes. Quotations are marked with the alternate names of teachers to keep them anonymous. While this chapter is describing the categorisation from the main theme down to codes for clarity purposes, it is important to remember that the actual categorisation process was operated from the codes up to the main theme. The Figure.1 below shows the whole categorization that I will explain by subthemes in the next sections.

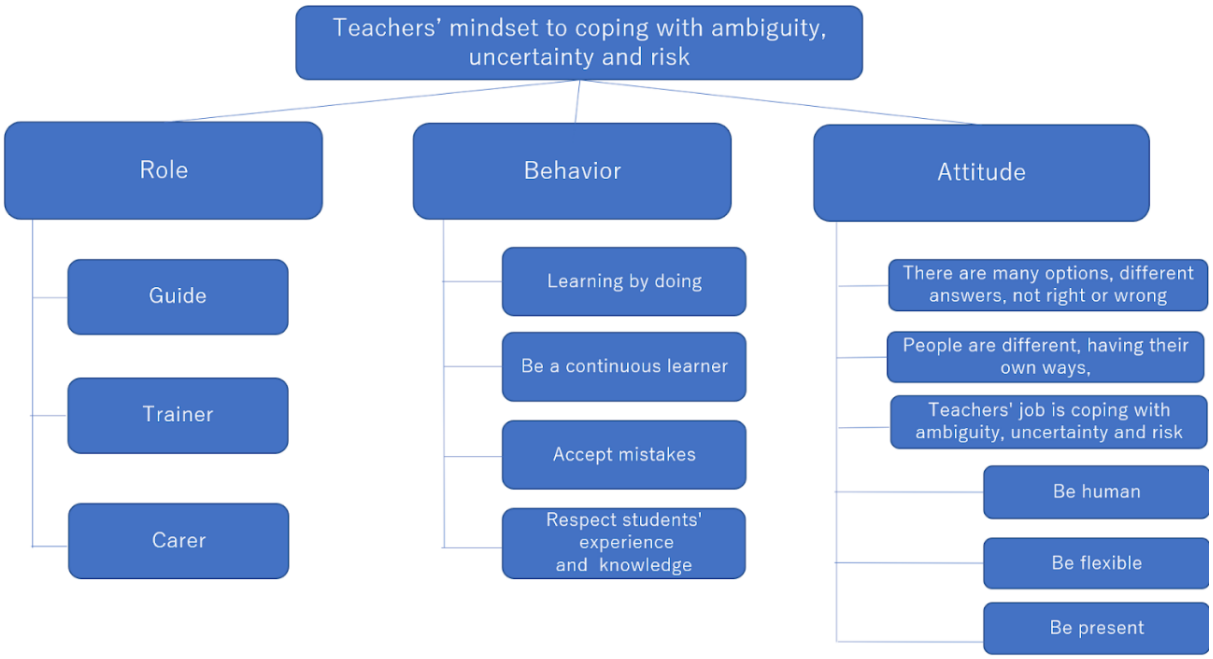

Figure 5. Overview of the thematic analysis: main theme, subthemes, simple codes and categories

Role, Attitude and Behavior are the three subthemes. In the end of these sections, I will establish boundaries among them. Briefly to being, Behavior is visible and is manifested in action or reaction to the objects, where Attitude is not directly observed (Marcinkowski and Reid, 2019). While Attitude involves predisposition to certain ideas, values, people, systems, institutions; Behaviour relates to the actual expression of feelings, action or inaction orally or/and through body language. Although Marcinkowski and Reid (2019) said that Attitudes have *cognitive* components (e.g. beliefs or knowledge), *affective* components (e.g. feelings or emotions), and *behavioral* components (e.g. a predisposition that may affect whether and how to act), my stance is slightly different. Role is teachers' recognition of who they are, what kind of character and mission they have expected of themselves in their job. It is manifested in relations. It pertains to their understanding of their job, marking distinction with Attitude and Behavior.

While apparently the three subthemes are intertwined, they offer distinct subtleties important to understanding the teachers' mindsets, and they are different to me. Since Role is recognition of what teachers need to do for their students, it is relational, Attitude is teachers' values and aspirations in their mind, such as trying to be human and flexible, and Behavior is visible

action, for example accepting mistakes. Attitude and Behavior happen not only in the relationship with students, Role offers relations with students. It is sure that Role recognition influences Attitude and Behavior, that is vice versa. Attitude affects Behavior as output of their values. Role is more action than values, such as support to try and make a safe atmosphere but also includes values, for example, trust, but they are towards students and Role is coming from how they identify themselves for students, in relation with students.

4.1 Subtheme - Role

One of the three subthemes is Role, which can be defined as "the position or purpose that someone or something has in a situation, organization, society, or relationship" in Cambridge Dictionary (Cambridge University Press, 2021). Moustafa et al. (2013) noted "(t)he teachers' role is to encourage and accept student autonomy and create a comfortable atmosphere for student expression," teachers are acting as guides for their students (Keiler, L.S., 2018). From those two definitions of Role, a common thread would be to see it as something relational. The role of the teacher is unique and complicated to define, and its definition is influenced by the culture, societies and environment (Makovec, 2018). What the Role subtheme shows is how teachers' recognize their own role, recognising elements pertaining to their relationships with students. From this thematic analysis, teachers' roles are supportive of students, trying to develop students' competences and trying to make them feel safe in the classroom, also in a relationship with the teachers and classmates. How the subtheme Role was formed is presented in Figure 6 (Thematic map of the subtheme, Role) and is coming from three categories; Guide, Trainer and Carer, which are themselves built up from codes. Guide category is formed from codes such as Solve together and Try their best. Trainer is coming from a grouped code, Specific students' skills/competences, which is composed of many single codes, such as Creativity, Working with others and Self-awareness and self-efficacy. Carer is consist of codes, such as Trust. In the next subsections, I will show how each of the categories were formed in the analysis, based on selected quotes from the participants and my interpretation.

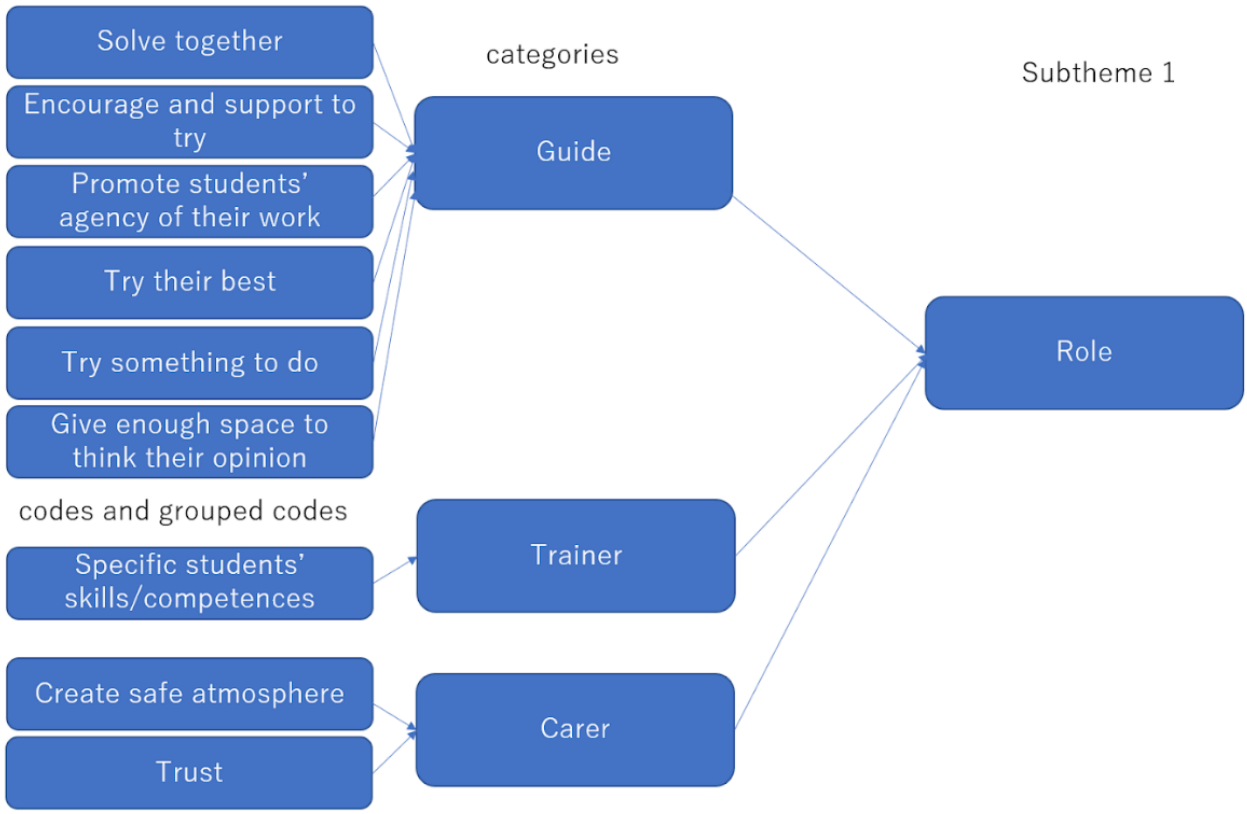

Figure 6. Thematic map of the subtheme, Role

4.1.1 Category - Guide

For Guide, teachers talked about what they are doing with students in the class. Guide shows how they work with students, sometimes navigator and facilitator, at other times supporter or a model. Guide here means supporting in accordance with the students' needs. Guide, is formed of single codes as following; Solve together, Encourage and support to try, Promote students' agency of their work, Try their best, Try something to do, Give enough space to think their opinion, For example, Solve together, Encourage and support to try mean that teachers accompany students and work together, not push or give pressure. I will not explain in detail all those codes here, but will instead focus on specific codes which are most explicit in showing how their meaning and interpretation resulted in them being coded and categorised as they are.

The code Solve together was discussed in this way:
I sit next to the student and we solve this together. I don't say the correct answer. I don't push him or her to go ahead or something like that. [*Arttu*]

Another teacher talked about (code) Encourage and support to try, in one quote:

it really doesn't matter if you are making mistakes. Because this is the group where you can try everything. You can try things. Yes. [*Hannu*]

Also, even if the teacher feels that he/she does not know how to support students, they just try something and work together.
For the code Try something to do in that way:
do you know, scratch [a programming app]? And they (students) don't. I don't know, either, but someone said it's cool way to do. What is it? coding? It's a cool way to code. Let's try it. And they (students) were like, Oh, no, let's not, some saids. I didn't know how to use it. But we have 15 minutes. Let's do it. And we did it. [*Kerttu*]

Those codes show teachers' role as a Guide, because teachers are not one-way teaching and hierarchical, looking down to students. They just work together, and try to support beside students, show that they too are learning and willing to try something new. Teachers recognize themselves as a Guide, not only people who deliver knowledge. Guide means that they support, encourage and/or facilitate and navigate students, sometimes they could be a broker of learning opportunities.

4.1.2 Category - Trainer

The second subtheme is Trainer and teachers understand their jobs as such. Trainer means a person who develops the students skills and competences. This subtheme is formed of a grouped code, Specific students' skills/competences, which consists of many single codes. As such, teachers in their interviews are talking about many competences, such as Creativity, Self-awareness and self-efficacy, Managing emotions or Working with others or Strategy and planning. Those competences represent the single codes forming the grouped code. Then there are, for example, Creativity, Strategy and planning, Working with others, and those kinds of competence are coming from the teachers' own ideas without me showing the Entrepreneurship Competence Framework. That said, some of those competences came up after I showed the Entrepreneurship Competence Framework to them and asked which competencies are important to you. Teachers tell that they try to develop those kinds of competences, specific students' competence. One of the teachers said that he tries to develop students' 21st century skills. Hence, depending on teachers, what kind of competences or skills that are important for students to

learn varies, but all of the teachers tell about trying to develop students' competences consciously.

For example, one of the grouped code Specific students' skills/competences is the code Working with others:
(students learn) how to work effectively as part of Team… [Eveliina]

I'm not having conversations, conversations only by the whole class, making like working with pairs working on smaller groups. [Hannu]

Teachers try to get students to work in small groups or pairs. In group or pair work, students need to cooperate with other students, they need to know how it works, what is the better way to deal with the specific members. Through the working style, students can develop competence, Working with others, not only with their best friends, but all other classmates.

For the code Strategies, planning:
"We (teachers) both had the worksheet, which helped them(students) to plan. And it had these kinds of aiding questions. Yes. So I think it's really important that the students know how to plan because it's going to help them in the future so that they don't just dive into the projects straightaway [Virpi]"

The last teacher explained that it will help students to learn to cope with ambiguity, uncertainty and risk. When students use Strategies, planning in their learning, they can better understand why and how Strategies, planning works, and also how much they are useful. Therefore, when the teacher gave the tool, Strategies, planning to students, students got to learn the competence. In that sense, teachers are working as a Trainer to develop the specific skills, not just support and stay by side. Also, some of the teachers said, school is a practicing place, students can practice anytime, that is why they do not need to care about making mistakes.

4.1.3 Category - Carer

The third category forming Role is Carer. Carer means that teachers are caring for the students in many ways in everyday life, so students can feel safe and try something easily, and express their opinions safely. It also makes students accept their own mistakes and others'

mistakes. When teachers care about the students, students can feel it. This influences positively the students to be fine making mistakes, also coping with ambiguity, uncertainty and risk.

For the code Safe atmosphere:
I try to take every student, to make sure that I notice every student, like the individuals so that it's not a group of kids, but they are unique. [Reija]

Many of the teachers said that they work to make students feel more safe and comfortable in relationships with other classmates and teachers. Some teachers said they speak to every student in the morning or every day, on each day. Teachers are intentionally trying to create a safe atmosphere for everyone and maintain safe and trusting relationships as a base for everything. It influences the classroom culture, which better allows students to make mistakes, and cope with ambiguity, uncertainty and risk.

The code Trust:
the kids and the teacher need to have (trust). If they need something more, they can ask the teacher for something more. [Tuomas]

basically it (coping with ambiguity and uncertainty) is like coming from music and we sing together like most every day. And that helps to cope with all these uncertainties somehow and also, I want to have open relationships with my students too. [Sakari]

Those excerpts show that a routine which involves risk safety, trust and comfort, working together with students helps establish a good relationship between students and teachers and it helps them to cope with ambiguity, uncertainty and risk. Some teachers said that they try to exercise Trust in very simple scenes. For example, in the younger grades, students start to be allowed to work without supervision by teachers, in corridors or lobbies. At first, teachers trust students, and then all students can trust back the teachers. As for the relationship between students, when one of the students makes mistakes, how do other students react? Many of the teachers answered that other students do not care, no one laughs at it, laughing badly at mistakes rarely happens in their classroom, likely because they already have good relationships, safe atmosphere. Teachers work as a Carer, that is why it could become like that.

Teachers recognize their own role as three categories, Guide, Trainer and Carer, in their relationships with the students. Then the teachers' recognition of Role influences their reaction towards coping with ambiguity, uncertainty and risk, also especially making mistakes.

4.2 Subtheme - Behavior

The second subtheme is Behavior, which can be defined as "the way in which one acts or conducts oneself, especially towards others" (Amin, 2017). Behavior is observable and measurable (Amin, 2017). Behavior is therefore rooted in actions, it can be conscious or unconscious, overt or covert. Behavior in relation to actions means how the person reacts or acts to some objects. The codes (in blue) and the category (in green) forming the Behavior subtheme are shown in Figure 7, and are Learning by doing, Be a continuous learner, Accept mistakes and Respect students' experience and knowledge. Accept mistakes is a category formed of codes, which I will explain in further details (see 4.2.1). Other groupings in blue are single codes that contributed directly to the formation of the Behavior subtheme.

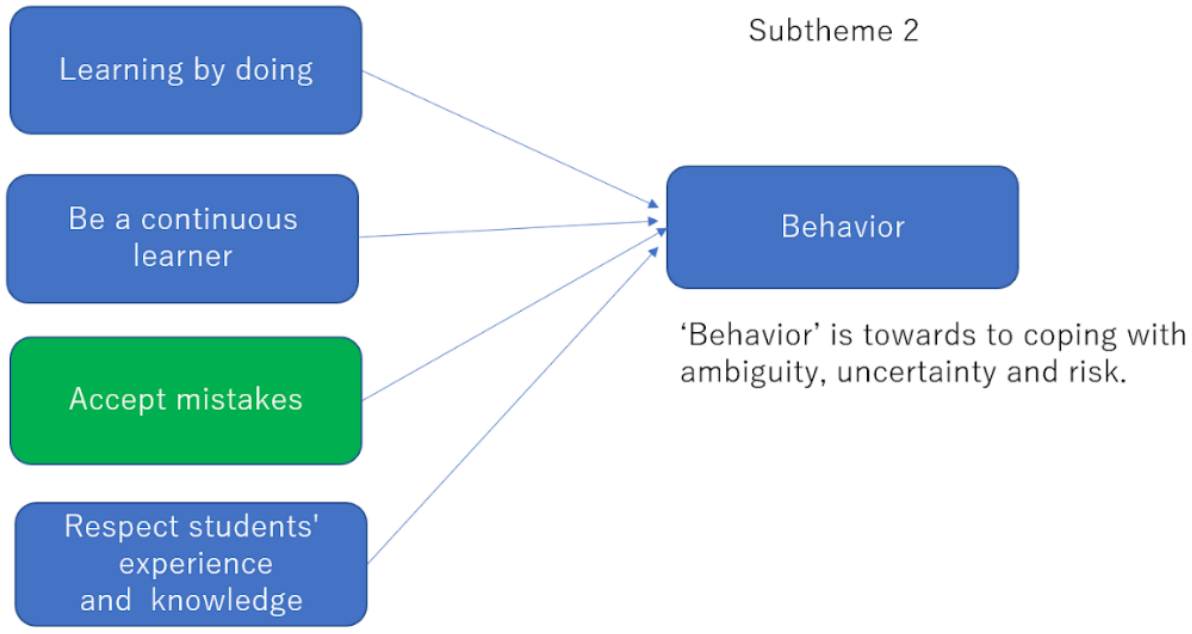

Figure 7. Thematic map of the subtheme, Behavior

For the code Learning by doing:

experimental learning is very important.I'm an experimental learner myself. [Jorma]

you (teacher) have to work a couple of years to learn how you do these things. You don't have those skills, how to do it automatically. You have to do it, and teach some years and you learn it by doing. [Eveliina]

Learning by doing is one of the common understanding in Finnish teachers when they teach, especially in an entrepreneurial perspective. Teachers behave by themselves, it helps cope with ambiguity, uncertainty and risk.

For the code Respect students' experience and knowledge:
usually we have some kind of question for the lesson. Like, for example, why do we need water? Or, especially at the beginning of the unit, we have this kind of question where we want to first find out what the students already know. [Sointu]

if we have a new topic, I usually like starting from what they already know. And then building from that, and kind of respecting their experience and their knowledge. [Virpi]

When the teachers teach knowledge in subjects, firstly they are active in asking about what students have already known about these topics, in a constructivist way. It means that teachers see students with existing knowledge, flattening in some ways the hierarchical relations between the 'knower' and the 'learner', contreing also in some ways the idea that teachers are the knowers and should give knowledge to students.

4.2.1 Category - Accept mistakes

Since the category Accept mistakes is answering more specifically one sub research question of this thesis, I will explain in more detail. Under the category, there are six single codes as shown on Figure 8.

Figure 8. Connections of single codes into a category, Accept mistakes

Commonly, interviewed teachers are optimistic and they are accepting and admitting the mistakes. They do not care so much about them. They do not take it seriously and continuously. They just accept mistakes and move forward.

For example, for the codes Move on, keep going:
that's also quite important to forgive them (students) and not to think about it over and over again, in teaching situations as a teacher, but you need to pass it and then keep going. [Kati]

Can someone add to that? Someone has another answer and then just goes forward. [Kerttu]

they(mistakes) cannot be so severe that they should throw you off. So Oh, that happened and move on or explain it to the kids and do something differently. [Tuomas]

Teachers and the students do not need to linger on an unexpected answer and identify it as a mistake, teachers choose instead to just keep going and recommend doing something differently. Teachers treat mistakes with a quite normal attitude, not making a point or taking them so seriously. I don't think teachers don't care at all about mistake making. As this can be reminded from the thesis title, many teachers said that.

For the code Not such a big deal
when you make a mistake, you just admit it, and then you correct it...it's not the end of the world [Eveliina]

I'm not so worried if the student answer wrong [Sointu]

Like not the end of the world. So, yeah, just try. Yes, it's the basic thing is to try to make something and things happen. [Sakari]

Code Like to take risks:
I like to take risks in a way that you can always find anything from the internet. [Kerttu]
This modeling of taking risks is also showing students that they should consider taking risks too, and it is fine if the attempt leads to unexpected results.

Then the code Learn from failure is also coming up in discussion many times from different teachers. I could even learn about the concept, 'productive failure' from one of them.

Code Learn from failure:
productive failure. I like it a lot, since it highlights that the failures and mistakes are actually the best things for your learning. [Eveliina]
I tell them (students) every time that you learn best from the mistakes that's the best way to learn. [Jorma]

One of the teachers even celebrates mistakes with her students together:
they(students) were scared that they're wrong, or they said something wrong. And we started to do this as like, stupid thing. But I say to them, when you make a mistake, you learn because you probably never do the same mistake again. And we started to make this big thing if somebody said wrong. And you know that that was incorrect. But let's give applause or something

like that [Katja]

At times, teachers visibly recognize mistakes as failures, but address them in a positive way, as a learning experience. Making a mistake or failing, is in fact recognized and treated as learning. Also, many teachers said that they laugh the mistakes off when they happen. Mistakes are not received badly, just treated with humour or with a smile. Then this attitude makes students not too afraid of making mistakes. This attitude in turn strongly influences students, because they are growing up and seeking models in teachers, parents and adults.

Code Laugh the mistake off:
And of course, with humor, also, that we can laugh here. [Kati]
I just might say something like, oops. Then just laugh it off. Yeah, I guess humor is one of the ways I might deal with that…. I kind of use humor to just make it less scary if you make a mistake. [Virpi]

It is important for students to know that adults make mistakes, especially primary school students. This can be seen with the code Adults (everyone) make mistakes:
you don't have to be ashamed that you make mistakes, everybody does. [Katja]

they (students) are allowed to make mistakes, make fault and this is normal. Normal life, everyday life. [Pauli]

everybody makes mistakes, I (teacher) make mistakes, your parents make mistakes. And even the President makes mistakes. And then the students were like, Ah, students react, what?! [Virpi]

Some teachers said that when they were students, they believed that adults did not make mistakes, that teachers did not make mistakes. That is why they emphasize to their students that everybody makes mistakes, and that mistakes are not bad things because all of us make mistakes, no need to be afraid, it is quite natural.

Teachers explain that everybody makes mistakes, even teachers and adults make mistakes and we all can learn from them. Hence, we do not need to care about mistakes, just Accept and move forward. In the subtheme, Behavior indicates that teachers' actions towards coping with

ambiguity, uncertainty and risk are not automatically open, they are trying to cope with those things by learning and accepting.

4.3 Subtheme - Attitude

The third subtheme is Attitude, which is defined as "Motivators of performance. They include values, aspirations and priorities" (Bacigalupo, Kampylis, Punie &Van den Brande, 2016). Attitude is slightly different from action, which characterised Behavior. Attitude is more of the realm of the person's heart and thoughts, but still can influence their Behavior. Role is distinguished from Attitude as in Role being often manifested in the relationship with the students, wherear Attitude is not necessarily relational. Role is recognition of what teachers do working for the students, and Attitude is the motivators behind, such as values and beliefs. The subtheme Attitude is formed of codes six in total, as Figure. 9 shows.

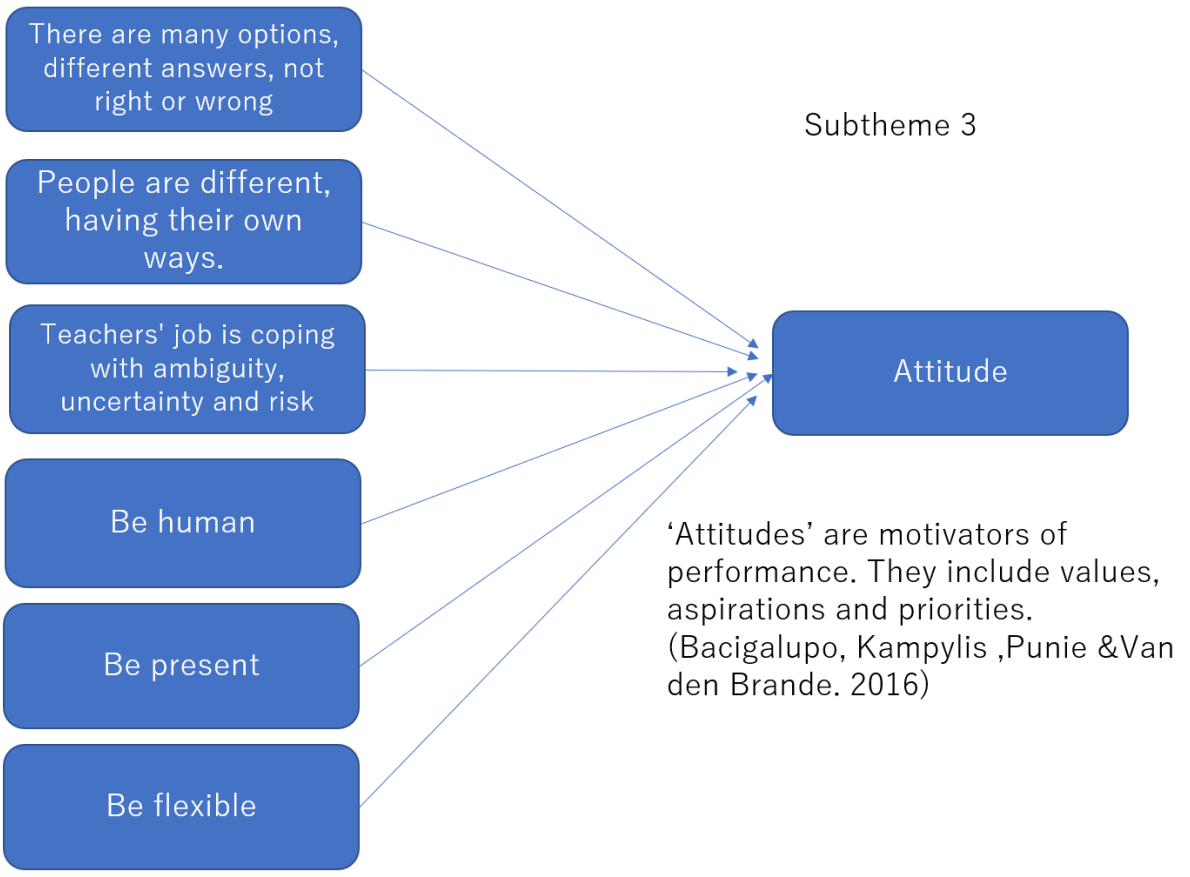

Figure 9. Thematic map of the subtheme, Attitude

The codes are There are many options, different answers, not right or wrong, People are different, having their own ways, Teachers' job is coping with ambiguity, uncertainty and risk, Be human, Be present and Be flexible.

For the code Be human:
I really want to show that I'm human too. So I really believe that this helps kids also. [Hannu]

For the code Be present:
I think the most important thing in teaching is to be present, like in this moment. [Sanni]

I kind of get to trust them (students). Of course, it doesn't always work. But like, that's my goal as a teacher to be present, and notice this kid, not just the teaching, [Katja]

Code Be flexible:
it's kind of you just have to accept it (coping with ambiguity, uncertainty and risk), and be ready to change your plans, which are like really short enough in a really short notice. [Eveliina]

we need to know what we are teaching and why we are teaching. But when we are flexible, we can react for the children and find the best ways there [Sanni]

From the answers of the interviews, teachers say that they are trying to be human and be present, be flexible, because there are no correct, right and wrong answers in many subjects and topics and teachers follow students' interest and motivation at first. The open attitude could help students face and accept ambiguity, uncertainty and risk. It develops the competence. Also those teachers' attitudes support students' agency of their learning.

For the code People are different, having their own ways:
We all have our own ways to do it. There is no one, one way to cope with risks. [Arttu]

you need to think for yourself, what is the best way for you to learn, and what is the best way for you to do things and to relax and to schedule your program and find your own way to do that….they have their own way of thinking. [Kerttu]

we have several choices for students to choose how to learn. Because we know that every people is different. And every one of us learn different ways. So I think it's the most important thing

that students learn to know how they learn, and what is the best way for them to learn? [Marjo]

There are many options and different good answers, and teachers and students all have their own ways to learn because people are different. Those kinds of Attitudes differentiate to cope with ambiguity and uncertainty. People understand that they are different from others, it means there is no one right answer for everyone, it often helps them to get used to coping with ambiguity, uncertainty and risk, also mistakes, they can pursue their own answer and their own ways to some extent.

For the code Teachers' job is coping with ambiguity, uncertainty and risk:
Teaching is full of those(ambiguity, uncertainty and risk) situations. And you just need to listen to your instinct. [Kati]

I think nowadays it's the whole world is much more uncertain than, like once I was at school, because we get so much information all the time and you have to be very careful once you're reading the text and for example history, I'm always explaining the students that once we read that Finnish history books, it's the same story is quite often very different either option, I think the explanations will be quite different depending on which country published? [Sointu]

Some teachers recognize their job itself is coping with ambiguity, uncertainty and risk because there are not right answers for everything, and even the knowledge in the text books might be out-dated or questionable. When they teach and talk with students, they are open and not take all responsibility for what they teach; students are learners and they also take initiative of their own learning.

4.4 Main theme - Teachers' mindset towards coping with ambiguity, uncertainty and risk

The main theme is Teachers' mindset. The word mindset means habits of mind formed by previous experience. In brief, mindsets are deeply held beliefs, attitudes and assumptions people create about who they are and how the world works (Buchanan & Kern, 2017).
According to Dweck's (2007) fixed and growth mindset theory, a fixed mindset limits one's ability to learn, but a growth mindset opens up the possibility of attaining higher levels of human potential. This idea has gained popularity in education and business, implying that the

mindset we choose for ourselves has a significant impact on our ability to learn and lead (Harvard Business Review Staff, 2014). She examined mindsets people use to structure the self and guide their behavior. People can develop their own mindset.Their view of themselves can determine everything (Dweck, 2007). In my analysis, Teachers' mindset arose from three subthemes, Role, Behavior and Attitude. Role shows their relationship with students, Behavior describes their action and Attitude indicates their values and beliefs. Those imply how teachers' think about themselves towards coping with ambiguity, uncertainty and risk. From the theoretical framework part (see 2.2.1), entrepreneurial mindset is important to develop in Entrepreneurship education. Teachers' entrepreneurial mindset, which analyzing the world, its opportunities, and possibilities, as well as comprehending how an individual can contribute to the building and advancement of the economic and social system, and finally putting ideas into action to achieve goals, could be seen from their categories and codes in Role, Behavior and Attitude. Teachers develop their own mindset towards coping with ambiguity, uncertainty and risk through their experience and knowledge in daily life.

To summarize, teachers appear to think about their own Role as Guide, Trainer and Carer. They are not really positioned hierarchically to students, they Support to try and Give enough space to students to think their opinion. Teachers' Behavior is also explicit. They respect students' knowledge and experience, and they are learning by coping with ambiguity, uncertainty and risk by themselves. Teachers do not care so much about themselves or students making mistakes, and if mistakes happen,teachers often just Accept and admit, or sometimes Laugh it off, with humor. Mistakes are nothing special, Not such a big deal, then they explain that everybody makes mistakes, even Adults make mistakes. Teachers' Behavior shows the acceptance of mistakes apparently. Then teachers show a positive and open Attitude towards ambiguity, uncertainty and risk. They are trying to be open, Be flexible and Be present at the moment. Teachers recognize their job with the feature of ambiguity and uncertainty, and also teachers are conscious that People are different, having their own ways. Therefore, Teachers' mindset towards coping with ambiguity, uncertainty and risk is trying to be open, accepting and even positive. They choose their mindset. Those kinds of things can be recognized from the interview results.

In the next chapter of the thesis, I will discuss answers to my research questions, and the importance of the findings and connect them to existing research. Also, I will assess the quality of my thesis, and explain limitations and ethical concerns. Then I will give implications and suggestions for further research in the end.

5 DISCUSSION

In this section I will examine how the findings answer the research questions. I will present the answers to my main research question; **What does coping with ambiguity, uncertainty and risk mean to Finnish primary school teachers?,** and the sub question as follows, **How do Finnish teachers react to general mistake making?** Then I will discuss the significance of the findings and connect them to existing research. As I established in the introduction, one of the aims of this research was to share/offer teachers, educators and also parents a glimpse into how Finnish primary school teachers understand one of the entrepreneurship competences, coping with ambiguity, uncertainty and risk and especially how they react to general mistakes making. I will provide observations into expanded considerations that could develop from the findings and how they can imply further research.

Through the analysis, Teachers' mindset consists of Role, Behavior and Attitude. The subthemes are interconnected, although the three have differences. Role shows how teachers recognize themselves as Guide, Trainer and Carer in relationship with students. Behavior means that teachers' actions; Respect students' experience and knowledge and Be a continuous learner themselves and Learning by doing. Attitude explains their values and beliefs, they are trying to Be human, Be flexible and they think that People are different, having their own ways. Mindset, their habits of mind from previous experiences, is developed by teachers' recognition and decision about themselves. Figure.10 displays that comparison and contrast among Role, Behavior and Attitude, and main theme Teachers' mindset.

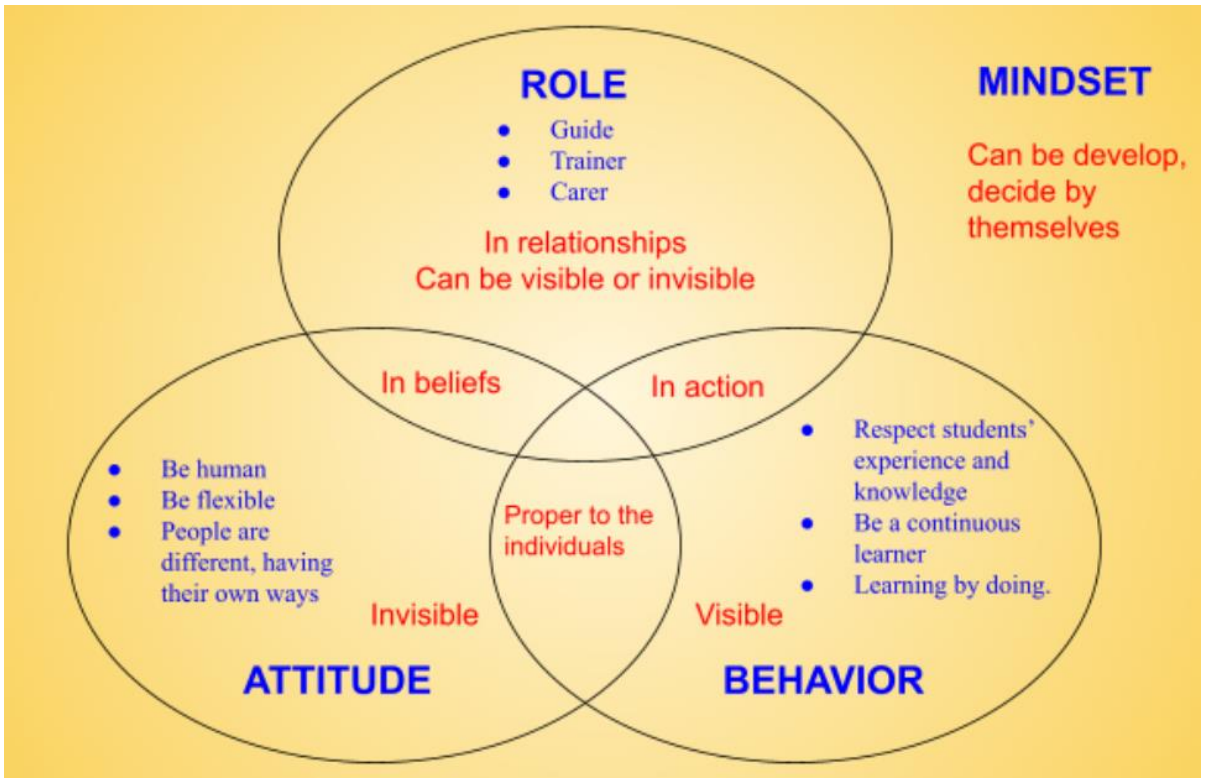

Figure 10. Comparing and contrasting three subthemes and main theme

In answering my research question, the three subthemes, Role, Behavior and Attitude explained what the competence means to teachers.

5.1 Role

Through the recognition of Role, I can see teachers think themselves to stand by students' side, and support them, not deliver knowledge, but also work together as a Guide, then develop students' competences as a Trainer, and make a safe atmosphere to feel secure as a Carer. I will look at three categories, Guide, Trainer and Carer, to find the answers to my research question. Firstly, Guide shows that teachers reduce students' fear of taking risks by supporting them and also they promote trying to do something. When they get used to doing so, it helps students cope with uncertainty. Teachers sometimes solve problems together with students, the non hierarchical relationship compensates for students' lack of knowledge and reduces risks and makes students familiar with uncertainty. Teachers give enough space to students to think their own opinion, it contributes to enduring ambiguity, teachers and students can trust and take initiative with their ideas. Secondly, Trainer demonstrates that teachers train students' skills and competences. For example, when teachers try to develop students' self-awareness and self-efficacy, teachers focus students' strength in many subjects and they convert in words. Some

teachers prepare entrepreneurial projects for two weeks to develop students' strategy and planning skills and grow self-awareness. Teachers explain the task and students organize how they do, how much time they will take for each task and how to cooperate with other classmates. Those projects can foster students' positive mindset to uncertainty and risk by experience which they decide how to do. For another competence, such as working with others, teachers consciously train students, by group work and pair work in daily life. It helps students cope with ambiguity, there are multiple interpretations and they can be conscious there is not one right answer, not one way to solve problems. Lastly, Carer displays that teachers try to make a safe atmosphere for students, it allows students to express their opinions and ideas with confidence. The relationship in the classroom devotes to stand ambiguity and uncertainty, also allowing students and teachers to make mistakes. Mental security is essential to make mistakes. Furthermore teachers make an effort to give trust to students, it shares relief when students and teachers take risks, it makes it easier to try.

In Finland, teachers have autonomy and freedom to choose teaching methods and strategy at school, so they are trying to develop their own way to cope with ambiguity, uncertainty and risk by using different approaches (see 2.1.2 and 2.2.2). According to the European Commission (2014), an entrepreneurial teacher's role is to be inspirational, open-minded, courageous, responsible, and flexible, if necessary they can be rule-breakers who bring changes. I can find answers which Finnish primary school teachers experiment with in various active ways and supportive relationships with students towards coping with ambiguity, uncertainty and risk through Role. It is an entrepreneurial teacher's role.

5.2 Behavior

Behavior shows that teachers try to be a continuous learner, some teachers get training programs after work proactively, they try to use new activities and methods. Through these actions, teachers have gained the confidence to withstand uncertain situations and risky challenges. They also behave with the idea of learning by doing, it develops and brings teachers' entrepreneurial behavior which emphasizes on doing, turning ideas into actions. It influences teachers to accept and endure uncertainty and even allow them to take risks. Teachers respect students' experience and knowledge, the behavior can contribute to fostering students' confidence to understand ambiguity, multiple interpretation of the topics and theme, and uncertainty by accepting lack of knowledge and being proud of their curiosity and learning skills

which they already have. The answer to the sub research question is to accept mistakes. Finnish primary school teachers reacted to general mistakes by accepting their mistakes or students' mistakes. Mistakes are not such a big deal to them, making mistakes is a part of life and people can learn from failure. The behavior, accepting general mistakes making, demonstrates how teachers understand ambiguous interpretation, imperfect and/or incomplete and risky situations. Teachers just accept them and try to move on and try to act on something. Teacher's behavior shows that they embrace and accept ambiguity, uncertainty and risk.

5.3 Attitude

Teachers' attitude can be identified that teachers understand and accept their job is full of ambiguity, uncertainty and risk and they are living at the moment and quite open and generous to students and also to themselves. When mistakes happen or various interpretations of the situation occur, teachers focus on the moment and they are just present there, those attitudes make students feel confident to try new things and share their ideas, cope with uncertain scenes and encourage them to take risks. Teachers' attitude, being human, also contributes to students accepting mistakes and taking risks. Their attitude develops students' attitude. Teachers' flexible attitude and priorities which are student-centered and open to change, also help students' agency of their own work, it encourages their actions and attitude towards risk-taking choices by following their own ideas and curiosity. The flexibility and openness can support teachers themselves, when an unexpected process and/or consequence happens. The attitude allows teachers themselves to feel comfortable about it. The teachers' belief, people are different, having their own ways, admits and accepts multiple understanding and interpretations. Also teachers value many options, different answers and willingness to take open questions, which do not have right or wrong answers. The attitude indicates teachers are open to ambiguous interpretation and clear answers, they try to get used to an uncertain environment. Through those teachers' attitude, I can say that teachers recognize ambiguity, uncertainty and risk in daily life and they try to embrace the situation and be flexible and positive to the circumstances. The attitude can be seen as entrepreneurial spirit.

5.4 Assessment, limitation and ethical consideration of the research

Commonly, research is evaluated according to the standards of reliability and validity. But the criteria for them come from the positivist tradition in quantitative research. It is important to

look for understanding which research results are consistent, accurate, repeatable, and/or generalizable (Golafshani, 2003). For maintaining the quality of research, Healy and Perry (2000) state that it should be judged on the terms of the paradigm it uses under. Therefore, much qualitative research assesses the trustworthiness, dependability, or credibility, as there are more precise measurements of quality in qualitative paradigms (Loh, 2013).

Collier-Reed et al. (2009) states that trustworthiness develops within contexts and is crucial in the collecting of empirical data, the analytical process, and the application of research findings. Trustworthiness in my research can be seen by my deep immersion in the context, in theory and in practice. Working in the classroom with some of those teachers for 7 months provided insight that could not have been gained otherwise in collecting, analyzing and interpreting my data accurately and with the teachers in mind. Dependability offers a clear method that was described and followed (Krefting, 1991; Lincoln & Guba, 1985; Creswell & Miller, 2000). Each step of the research process was scrutinized, from the appraisal of current research, data collection and writing to ensuring the thematic analysis was conducted with care. Nowell et al. (2017) provide a clear grasp of how to conduct a rigorous thematic analysis. They show how to finish each phase of Braun and Clarke's thematic analysis methodology in a way that fosters dependability. Nowell et al (2017) recommended getting support from a research team. There was no team to seek consensus with. Therefore, I was the sole researcher for this thesis. However, I had conversations with my supervisor for debriefing on a regular basis. Credibility means that researcher knows the material and participants well, engages in the field and has thick rich descriptions (Krefting, 1991; Lincoln & Guba, 1985; Creswell & Miller, 2000). I know some of the teachers, worked at one of the schools, discussed and talked with teachers on different topics, hence I was absorbed in their ideas and attitudes. I have enough understanding to interpret their interview answers and explanations of classroom situations. Therefore, my research is trustworthy.

Any qualitative study has its own set of limitations. There is the main issue to consider. As much as this should be avoided, it is hard to prevent all leads because the interview procedure itself might be viewed as a researcher's influence on the subject. All of the questions, as open and free as they can be, are focused in attention on one issue that the participants might not have examined otherwise. Although I tried to avoid and lead to specific meanings and ideas and kept in mind to be objective, I noticed during the interviews that it was challenging not to deliver my perspective into the discussion, when the teachers asked for clarification or more

information. I think that my answers to the teachers' questions, such as about 'mistakes', 'ambiguity' and 'uncertainty', are still fine because it did not bring a big change or difference without saying my understanding. Mistakes include several things from acting differently to what is expected (behavior) to calculation errors in mathematics (knowledge). I also noticed that I asked my interview questions about Entrepreneurship education at primary school level in the beginning, and asked interviewees to talk about Entrepreneurship education, mainly about making mistakes. But during looking for the interviewees, I asked people and teachers, what I would like to know is about making mistakes. I did not say anything about coping with ambiguity, uncertainty and risk before I sent them some questions for the interviews. I mean that at first I was very conscious to capture the Entrepreneurship education context, but I changed to emphasize about making mistakes because many teachers reacted that they did not know about Entrepreneurship education, and they thought that they were not suitable for the interviewees. There are other limitations, language barrier and the number of the interviews. I could read literature only in English about Entrepreneurship education, Entrepreneurship competence, Coping with ambiguity, uncertainty and risk, Making mistakes, Finnish education and Finnish teachers. Hence I could not reach the research in Finnish, I could not know whether similar research is conducted or not in Finnish. Also I did interviews in English, it might make teachers' explanations and answers harder or a mental barrier to answer the questions. As for generalizability, a total of 15 primary school teachers were interviewed for this study. I asked them to sign informed consent and I wrote all quotes and information anonymously as ethical considerations. The quality of a study in qualitative research is decided by the material quality rather than the sample size. It should be noted, however, that the findings are not generalizable. Nonetheless, I feel they might serve as a starting point for further research as well as a useful resource for individuals with similar interests.

5.5 Implications and further research

In this subchapter, I will discuss implications from the findings. Although it is sure that the findings cannot be generalized since the sample size is relatively small, it is a good starting point to talk about Finnish primary school teachers' perspective through Entrepreneurship education scope.

In the beginning, I wanted to find out the teachers' pedagogy to develop students to accept making mistakes. Also, I wanted to focus on teachers who have already used or taught Entrepreneurship education to students, but in the process of looking for interviewees, I noticed that

it is difficult. I could not find the teachers to adequate numbers and then decided to include teachers who do not teach/use Entrepreneurship education. Therefore, I took this research with both groups, one is the teachers who have already used or taught it and the other group is the teachers who do not adopt it consciously. Then I find that between the two groups, there are not big differences in teachers' mindset towards coping with ambiguity, uncertainty and risk, and especially making mistakes. Many of the teachers are trying to develop students' entrepreneurship competences, such as coping with ambiguity, uncertainty and risk, creativity, self-awareness and self-efficacy, and planning and management without knowing that the competences are part of Entrepreneurship Competence Framework, but some of them know these competences as general 21st century skills (although there are quite many different competences and definitions in the world). All teachers who I interviewed have a similar mindset towards coping with ambiguity, uncertainty and risk regardless of knowing Entrepreneurship education and/or Entrepreneurship Competence framework. If Finnish primary school teachers can get to know more about Entrepreneurship education, they will be able to develop more the competence, coping with ambiguity, uncertainty and risk. In that sense, from the findings, I can hypothesize some following ideas by observing Finland. Entrepreneurship education training for Finnish primary school teachers does not need to develop THIS specific entrepreneurship competence (coping with ambiguity, uncertainty and risk), because they have it already to some extent. I think that the teachers' mindset is coming from the culture in Finland, also teachers' selection and teacher education. In Finland teachers are selected in competitive enrollment as a premise, and they train their mindset and competence through research-based study and practical emphasized teacher training. There is the culture that teachers are trusted and they have autonomy (Kansanen, 2007). Those might develop teachers' Role (understanding job in relationship with students), Behavior (action) and Attitude (value and belief) to foster the mindset towards coping with ambiguity, uncertainty and risk. Also, I can say that teachers with an entrepreneurial mindset must have individual and relational attributes that are visible or not, located in beliefs and in action (see Figure.10), to help students cope with mistake making and coping with ambiguity, uncertainty and risk. Therefore, if teacher education in other countries could be changed to be more research based, including writing theses and learning theory with practical experience by 700 hours teaching observation and practices in teacher training schools, it will be effective to get the entrepreneurship competence. Additionally, trust and autonomy culture might be hard to offer into other countries, but if educational authorities allow more freedom to teachers to decide their teaching way and their learning environment, it might be possible to change more

positive mindset to ambiguity, uncertainty and risk because they can take initiative and responsible to their uncertain and ambiguous issues in teaching and it will help to increase teachers' confidence. The idea can be useful not only for primary school teachers, but also all other adults and children. If they have enough space and right to think and try their own ideas, the mindset could be changed.

In line with existing research, my research contributes to understanding Finnish primary school teachers' mindset to one of the Entrepreneurship Competence framework and making mistakes, although I could not say how the mindset has been developed and how Entrepreneurship education needs to be implemented to develop teachers' and students' entrepreneurial mindset. For further research in the field, I could think of some questions to acquire better understanding and clarification.

- How and when Finnish primary school teachers get the open mindset towards making mistakes in teacher education or in their career?
- What kind of Entrepreneurship education program can foster Finnish primary school teachers' entrepreneurial mindset, especially coping with ambiguity, uncertainty and risk?

Additionally, to further research, it is possible to compare between Finnish and other countries' (for example, Japanese) primary school teachers' mindset towards coping with ambiguity, uncertainty and risk but at that time I think that I need to have much clearer discussion what is coping with ambiguity, uncertainty and risk, and what kind of things are mistake to the teachers, what mistakes are.

6 CONCLUSION

The findings could give implication and suggestion to improve teachers' mindset towards coping with ambiguity, uncertainty and risk, and making mistakes. Finnish primary school teachers themselves try to be flexible and also model for and encourage students to learn ambiguity, uncertainty and risk. Teachers are open-minded, some of them are also willing to take risks. Making mistakes by students and by teachers themselves is not negative, and is just normal to accept it, not being a big thing, people learn from failure. The teachers show their Role, Behavior and Attitude through the interviews, then they form their mindset. The mindset gave me the light to think how to Japanese issues could be solved from teachers', educators' positions, with

Entrepreneurship education context. Finnish primary school teachers' mindset is accepting mistakes and it is open to ambiguity, uncertainty and risk and they try to act on it. We can learn from it. For example, teachers in other countries can discuss what teachers' Roles are, then compare with Finnish primary school teachers' understanding. If they can find the gap between them in concrete and visible words, they can think how to fill the gap by specific actions, how they can change. Furthermore, if they can discuss their reaction about their own mistakes and students' mistakes and look at the differences between Finnish teachers' reactions and their own, they can start to change their Behavior, for example just learning by doing and respecting students' knowledge and experience. Changing mindset seems difficult, but people can determine their view of everything (Dweck, 2007), it is possible to change by small steps. If they can realize their own mindset, Role, Behavior and Attitude by comparing with others', people can determine to change their view to mistakes and ambiguity, uncertainty and risk. As for making mistakes, teachers can reconsider what mistakes are and how teachers should react to make a better learning environment, they can see making mistakes differently. There is potential for Japanese teachers, educators, parents and other adults to change their mindset towards coping with ambiguity, uncertainty and risk. If they could recognize mistake making differently, more just accepting, open to mistakes through self-reflection of their Role, Behavior and Attitude, and comparing with Finnish teachers', then the situation in the issues in Japan might head in a better direction. Through the research, the most useful finding is teachers' Attitude. They are trying to be present, flexible and human, they are conscious that people are different and there is no one right answer and option. It is related to their Behavior, accepting mistakes and respecting students. I could learn their Attitude the most and I think it is useful to Japanese teachers. Of course, Japanese issues, childrens' low self-esteem, "Futoko" and high suicide rate of youth are quite complicated and it is not only an educational problem, so it is hard to change instantly. But I hope that changes in teachers' and adults' mindset can happen. My research could show the ideas to encourage Japanese people to cope with ambiguity, uncertainty and risk in fast-paced changing and uncertain world situations.

While conducting this research and writing the report, I found myself hesitating with uncertainty and ambiguity. I felt I had to ask my supervisor to make sure whether I was doing it right or not (although there is no exact right answer), because I would not want to 'make a mistake'. Since I am the only author of my thesis, I need to think and can decide by myself. I often tried throwing decision making to my supervisor unconsciously. Then I realized that it happens not only to Japanese children which my interest is coming from and to teachers, but also myself

ironically, as I objectively looked at my own reactions throughout the thesis process. I tried to avoid making mistakes. I hesitated to decide and take initiative on my thesis, from fear of making mistakes. Also, my mindset is that I do not have enough experience and knowledge to complete this. In Japan, we have the value that teachers teach students, students are not enough to achieve by themselves, students need to ask teachers' answers, and decision making tends to rely on others. I am thinking that I am "not good enough" to decide and write, so I should be "taught" by a supervisor. It is the opposite idea of entrepreneurship. When I realized my behavior and mindset, I was shocked and saddened. The Japanese issue which I would like to solve, and try to find a clue of solution from this research was not only others' problems, but also my own, my mindset towards coping with ambiguity, uncertainty and risk, and making mistakes. This research and thesis writing experience has definitely helped me to deepen my understanding of coping with ambiguity, uncertainty and risk and to develop this competence. It was effective for self-reflection. At the end, as I analyzed and reviewed the responses and comments from the interviewees, I could not tell how much they encouraged me and reduced my fear of making mistakes. Still, it is not easy to change a mindset, that of a people even less than that of an individual. That said, I hope that these reflections of the participating teachers and of my learning journey will be useful and encouraging to others who are too struggling in coping with ambiguity, uncertainty and risk, and making mistakes.

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Appendix1-Informed consent

Informed consent for participating in research

This informed consent form provides you as a research participant general information about the research, its purpose and your rights as a participant.

General information

I am a master's student in the Education and Globalization Master Program, at the Faculty of Education, University of Oulu. As a part of my studies, I am conducting a research in Entrepreneurship Education for primary school students. The purpose of my research is to know how Finnish primary school teachers develop students' entrepreneurial mindset, especially accepting making mistakes. I kindly request your consent for collecting information from you for the research purpose by interviewing.

All information will be used anonymously, respecting your dignity. No personal details that enable identifying you will be included in the analyses and reporting. Systematic care in handling and storing the information will be ensured to avoid any kind of harm to you. After all the information leading to identification of a person has been removed, the information will be destroyed after the thesis has been assessed and approved by the Faculty of Education and published.

Voluntary participation

Your participation is completely voluntary. You have the right to withdraw from the research at any time without any consequences. Observe that information collected before your withdrawal may be used. You have the right to get information about the research and may contact me, if you have questions.

Confirming informed consent

☐ I am willing to participate in the research.
☐ I allow the use of interviews for research purposes.
☐ I allow the information that I have provided to be stored and archived for further research use.
☐ I do not allow the information that I have provided to be stored and archived for further research use.

Date___/___20

_____

Signature and name (in capital letters)

Researcher

_____

Signature
Junko Tanaka, [redacted]

This thesis research is supervised by:

University teacher and researcher, Audrey Paradis, University of Oulu

More information about research ethics and informed consent:
Finnish Board on Research Integrity
http://www.tenk.fi/en/ethical-review-in-hunman-sciences
Social Sciences Data Archive
http://www.fsd.uta.fi/aineistonhallinta/en/informing-research-participants.html#partIV-examples-of-research-participants
http://www.fsd.uta.fi/aineistonhallinta/en/anonymisation-and-identifiers.html

Appendix 2 -Email texts to teachers for the interview

Dear XXX

Hi, how are you? I appreciate your help.

Here is the information for tomorrow.
・zoom link for **14:00 of 16th Dec, tomorrow.**
[redacted]
Passcord [redacted]

・informed consent
I attach the document at this email. Kindly confirm it and if there's no problem, **please sign me back by PDF file.**

・interview questions
-What do you know about "entrepreneurship"?
-How do you react/behave if/when you make a mistake in class in front of the students?
-What do you do specifically in your teaching to help students learn about Coping with ambiguity, uncertainty and risk?
-Could you give me a typical situation where students make big and small mistakes in class? How do you react? How do the student react? How do you support him/her?

Please don't prepare and think much beforehand. If you don't prepare at all, it's really okei! If you don't know so much above, it is also totally fine. I would like to know also about it. I will ask more questions maybe, but I don't send you all now because I would like to know your feeling, reaction and first idea which is coming up in your mind.

I appreciate your help so much.
Kiitos.

"See" you tomorrow!

Best regards,
Junko

Appendix 3 -Interview questions

Theme A – teacher info (to do quickly)	Can you tell me about your whole teaching CV? (where and what have you taught, for how long, where, to which students etc)
	What do you know about Entrepreneurship Education? (if so, then you could also ask those next questions). If not, then just move on Where did you learn about it, why ect.
	How would you describe your teaching style/approach with your students in general (maybe here something about EE will come up but maybe not and don't push for it at this point).
	How do you react/behave if/when you make a mistake in class in front of the students?
Theme B – the specific competence	What does ***Coping with ambiguity, uncertainty and risk*** mean to you in teaching students in general?
	What do you do specifically in your teaching to help students learn about ***Coping with ambiguity, uncertainty and risk***
	Do you teach that explicitly to the students and if so how?
	Explain to me a typical situation where students make big and small mistakes in class? How do the teacher react? How do the student who made the mistake react? How do you support them? How do peers react? What is the follow up? (since this is key, you could add more questions to this, with examples or ask more about what they say about this)
Theme C – the general competences	Can you tell me about other competences you think are important for students to learn?
	(here you can how the competence wheel*) – tell me what you know about those competences and if you teach them, how?
Theme D – only for those who explicitly know about EE	Tell me what Entrepreneurship and EE mean to you?
	How long have you known about it? How long ago have you included it in your teaching? And then show the wheel picture
	What are you doing specifically in your classroom to promote/teach EE?